(12)

NOSC

NAVAL OCEAN SYSTEMS CENTER San Diego, California 92152-5000

NOSC TD 919

Technical Document 919
September 1986

Training for Technical Assistants: Technical Assistance Program

Mansfield & Associates

AD-A174 415

DTIC FILE COPY

DEPARTMENT OF THE NAVY
NAVAL OCEAN SYSTEMS CENTER

86 11 18 0

UNCLASSIFIED
SECURITY CLASSIFICATION OF THIS PAGE

AD-A174 415

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION	
1b. RESTRICTIVE MARKINGS	
2a. SECURITY CLASSIFICATION AUTHORITY	UNCLASSIFIED
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE	
3. DISTRIBUTION/AVAILABILITY OF REPORT	Approved for public release; distribution is unlimited.
4. PERFORMING ORGANIZATION REPORT NUMBER(S)	
5. MONITORING ORGANIZATION REPORT NUMBER(S)	NOSC TD 919
6a. NAME OF PERFORMING ORGANIZATION	Mansfield and Associates
6b. OFFICE SYMBOL (if applicable)	
7a. NAME OF MONITORING ORGANIZATION	Naval Ocean Systems Center
6c. ADDRESS (City, State and ZIP Code)	Groton, CT 06320
7b. ADDRESS (City, State and ZIP Code)	San Diego, CA 92152-5000
8a. NAME OF FUNDING/SPONSORING ORGANIZATION	Office of the Chief of Naval Research
8b. OFFICE SYMBOL (if applicable)	ONCR-01223
9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER	N66001-85-M-A083
8c. ADDRESS (City, State and ZIP Code)	Technology Transfer Division Arlington, VA 22217-5000

10. SOURCE OF FUNDING NUMBERS

PROGRAM ELEMENT NO	PROJECT NO	TASK NO	AGENCY ACCESSION NO
65804N	Z0835	014-XB18	DN488 871

11. TITLE (include Security Classification)	Training for Technical Assistants: Technical Assistance Program
12. PERSONAL AUTHOR(S)	Mansfield & Associates
13a. TYPE OF REPORT	Final
13b. TIME COVERED	FROM Feb 1986 TO Apr 1986
14. DATE OF REPORT (Year, Month, Day)	September 1986
15. PAGE COUNT	
16. SUPPLEMENTARY NOTATION	

17. COSATI CODES

FIELD	GROUP	SUB-GROUP

18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)

Transfer technology (T^2), Federal Laboratory Consortium (FLC), technical volunteerism

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

The Naval Ocean Systems Center is establishing a Technical Volunteer Service (TVS) that will offer personal-time opportunities for employees, retirees, and other Navy-related technical personnel to donate mission-developed skills for technical assistance to the civilian sector per Public Law 98-480. The TVS will work closely with the NOSC Office of Research and Technology Assessment (ORTA) to help carry out domestic technology transfer objectives. The method employed will consist of field surveys of the NOSC and community situation to establish a viable Technical Assistance Program/Technical Volunteer Services (TAP/TVS). This technical document is intended as an introduction to the TAP/TVS for prospective and actual volunteers.

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT	[X] UNCLASSIFIED/UNLIMITED [ ] SAME AS RPT [ ] DTIC USERS
21. ABSTRACT SECURITY CLASSIFICATION	UNCLASSIFIED
22a. NAME OF RESPONSIBLE INDIVIDUAL	R. November
22b. TELEPHONE (include Area Code)	(619) 225-6281
22c. OFFICE SYMBOL	Code 0141

DD FORM 1473, 84 JAN

83 APR EDITION MAY BE USED UNTIL EXHAUSTED
ALL OTHER EDITIONS ARE OBSOLETE

UNCLASSIFIED
SECURITY CLASSIFICATION OF THIS PAGE

FOREWORD

This document was originally conceived as a training manual. To qualify as such, it should contain formal guidelines, rules, regulations, and a set of standard operating procedures. In other words, a training manual would be expected to provide a concrete road map to maximum performance.

None of this applies here. The history of technology transfer, and its adjunct, Technical Assistance Programs/Technical Volunteer Services (TAP/TVS) is still being written. Each new program is unique and original in the sense that its design and operation are carefully tailored to address specific local conditions.

There is more to gain from this manual than rules and regulations. In learning how other Federal laboratories operate their programs, one comes to understand the nature of TAP/TVS.

The manual is designed for two readerships: the potential TAP/TVS volunteer and the instructor who will introduce technology transfer and TAP/TVS programs to groups of potential volunteers.

It contains general information describing the history, obstacles, and adaptations of Technical Assistance Programs/Technical Volunteer Services. It also contains specific information geared to the self-instructed volunteer as well as training guidelines for the TAP/TVS instructor. Additional/pertinent material, such as TAP/TVS newsletters, technical reports, brochures, and publicity is located in appendices.

Both types of readers can make choices about the backup material according to their own particular needs as to whether to scan, or study in depth, the information provided.

Each Federal laboratory sponsoring a new TAP/TVS program will have copies of the backup materials that cannot be included in this manual. Videos, slide shows, and books can be borrowed by making prior arrangements with the Office of Research and Technology Assessment at the laboratory.

Whether you use this manual and other TAP/TVS materials as an instructor or for purposes of self-learning, it is important to come to it with a mindset of unleashing unique technical talents in ways that benefit the provider, the user, and the nation. In the ultimate sense, technical assistance is a patriotic program.

By knowing the history of technology transfer, its flexibility, the few restrictions that exist, as well as the vast resources that are available to the savvy individual volunteer, the technically trained can expect to make an important impact on their community.

You and others in your Technical Assistance Program/Technical Volunteer Services can look to those volunteers who have already made names for themselves nationally with their community-applied efforts: In April 1985, a Rhode Island technical assistant (an electrical engineer with the Naval Underwater Systems Center) went to the White House to collect a silver medallion from the President as one of the nation's 17 most outstanding volunteers. He was recognized for creating devices that enable the nonvocal handicapped to communicate. As one young woman said upon receipt of a mechanical voice, "He made my dreams come true."

Good luck and welcome to the ever-growing group of people who use their special skills and experience to put technology to work in the community.

TECHNOLOGY TRANSFER DEFINITIONS

1. **Federal Laboratory Consortium (FLC)** – the peer group that connects laboratories and provides a nationwide network for technology flow.

2. **Office of Research and Technology Assessment (ORTA)** – that function at the individual laboratory level charged with the responsibility of examining the internal research agenda for purposes of spotlighting results with potential to be used in new ways. This office also receives, responds to, or forwards all technology inquiries from the public sector.

3. **Technology Transfer (T^2)** – the process of finding new uses for Federal R & D results applications.

4. **Technology User** – any industry, university, small business, municipality, service agency, or individual whose need falls under the definition of domestic technology transfer and who asks for and receives technical information, advice, or assistance that allows for improved performance. The technical assistance provided should enhance efficiency, effectiveness, quality of life, economic development, or any goal that would inherently strengthen the national infrastructure.

5. **Technical Assistance Program (TAP)/Technical Volunteer Service (TVS)** – an adjunct of the ORTA office made up of employees, retirees, or associates of a laboratory. The goal of this group is to provide the manpower to ensure that technology is put to work in the local community.

CONTENTS

FIGURES

CHAPTER 1
TECHNOLOGY TRANSFER: A HISTORICAL PERSPECTIVE

This chapter presents the historical development of the technology transfer concept and Technical Assistance Program/Technical Volunteer Service.

THE ORIGINS

During the mid-1960s, the U.S. Navy took aim at a longstanding problem: the tendency of military research results to pool around the point of origin, instead of flowing efficiently outward to diverse field locations where new answers are needed immediately for pressing problems. The lack of efficient diffusion of technical information created a ponderousness of response in the military community. In an effort to solve this problem, calculated measures were initiated to encourage better and faster knowledge use. This process of speeding up the application of research results was labeled technology transfer. Within the Navy context, this meant transmitting information from the people who created it to the people who needed it.

Meanwhile, the scientific requirements of our nation's initial space probe produced an explosion of engineering innovations. Unexpectedly, under the glare of media attention, these innovations were quickly adapted to solve problems of a far different nature than their original NASA applications. For example, the polyceramic developed to keep space capsules from igniting upon re-entry to the earth's atmosphere ultimately became both a cosmetic dental coating and freezer-to-oven cookware; the power supplies developed for use in outer space became the basis of medicine's heart pacemaker. Such spinoff benefits helped to justify the tremendous expense of our space program research.

Taxpayer interest in Federal budget items also brought science and R & D expenses to accountability. Research merely for the sake of contributing to the greater body of knowledge was no longer sufficient. The imperative was for concrete, measurable results: good ideas put into practice -- applied science. Additionally, the Vietnam era also saw a Nation begin to question military expenditures. Defense was no longer a sufficient rationale for budgetary expense.

As Government research passed through this critical refocusing period, new attitudes surfaced: "more bang for the buck," "don't reinvent the wheel," "science for society," all suggesting the new mood of spending justification.

Across the oceans, other nations matured: industrially, technically, and economically. Their maturation meant new competition for American products in the world marketplace, applying even greater pressure to fully capitalize on our country's research investment.

THE FOUNDING OF THE FEDERAL LABORATORY CONSORTIUM

In the early 1970s, representatives from several Navy research and development laboratories met to brainstorm about the process of technology transfer. They were later joined by representatives from Army and Air Force laboratories. Together they formed the Department of Defense Technology Transfer Group, whose interest was the interagency sharing of research results to strenghten national defense.

By 1974, the Department of Defense Technology Transfer Group had expanded to include all agencies of the Federal government and had given itself a new name, the Federal Laboratory Consortium (FLC). In the process, the group had also reorganized its view of

the end user for taxpayer-financed R & D. Technology was to be shared not only in and among the various agency laboratories, but also with universities, state and local governments, industry, and the small business community. This new version of technology transfer aimed to strengthen the entire American infrastructure through the application of new technologies.

Before October 1980, the decision to engage in the practice of technology transfer was the decision of the individual laboratory director. If the director believed that moving in-house technology toward everyday use or the marketplace was a worthy undertaking, and without risk to the stated mission of the laboratory, a staff could be assigned to the technology transfer function. Some laboratory directors did just that. Others, concerned that any formal effort might reduce their mission effectiveness, chose not to engage in active technology transfer but assigned the function as collateral duty to laboratory staffers.

Liberal travel policies at Federal laboratories and the lack of FLC membership dues created a "window of opportunity" for scientists interested in and committed to the concept of technology transfer. At biannual meetings, a growing number of individuals committed to domestic technology transfer gathered to share beliefs, ideas, and activities with peers from other laboratories around the country. Those permitted by their laboratories to actively pursue technology transfer shared their program activities, problems, and results. Effective arguments to gain top management approval for technology transfer (T^2) were formulated for those without a clear mandate to proceed.

Initially, few T^2 programs had operating budgets. Technology was transferred as the result of courageous entrepreneurial volunteers who knew how to move projects through the bureaucratic system. Personal commitment powered the first few technology transfers, not the mandate of any formal institutionalized program.

THE STEVENSON-WYDLER TECHNOLOGY INNOVATION ACT

In spite of problems, the FLC continued to grow. By 1980, it had over 200 associates. In October 1980, this small band of believers was finally successful in passing legislation, the Stevenson-Wydler Technology Innovation Act, PL96-480, that legitimized the process. Their dreams of budgetary allocations to mount aggressive T^2 programs were dashed, however, when the major Federal government agencies opted to exercise their right to waive the monetary set-aside designed to fund the T^2 process.

The Stevenson-Wydler Technology Innovation Act, although lacking financial teeth, served several useful purposes. It allowed T^2 proponents inside the Federal system to write directives to laboratories under their jurisdiction outlining the requirements for participation. The law itself was concrete and tangible; it could be used to demonstrate to procedure-conscious decisionmakers that higher-level authority to proceed with technology transfer was indeed in place. A copy of the law is included in Appendix A for the reader's review. A copy of the follow-up report in 1984, the "Stevenson-Wydler Technology Innovation Act of 1980 Report to the President and the Congress," is also included in Appendix A. Support of this legislation by the FLC is documented in viewgraphs located in Appendix B.

THE FLC TODAY

The Federal Laboratory Consortium currently numbers more than 300 proponents. The voting membership is made up of Federal laboratory representatives, but it is joined at regular meetings by representatives from business, state, and local governments, trade associations, engineering societies, and the universities. All participants use their own internal networks to encourage the expansion of technology transfer. Such self-interest generates better

utilization of the $53 billion worth of annual Federal laboratory research. FLC annual brochures, highlighting various technology transfer projects, are located in Appendix B for review.

1986 is expected to produce revised technology transfer legislation (summary located in Appendix A), which will include a revised handling of Federal patents, the institutionalization of the FLC within the National Science Foundation, and a clear-cut budget allocation.

TECHNOLOGY TRANSFER: THE FUTURE

Taking an imaginative look into the future, it is hoped that a national Technical Assistance Program/Technical Volunteer Service will be in place to enhance the technology transfer process. This would mean an active, institutionalized program at nearly all the 779 Federal laboratories.

The individual programs would be further linked by the FLC to each other with a smooth regular flow of information. Good ideas would be transferred from Maine to Arizona. The nuclear scientist in Oregon could talk with the agriculture specialist in Louisiana if their volunteer projects made it necessary.

The ORTA office could then focus on gathering technologies, understanding the various laboratory resources, and educating their volunteer forces about such matters. The volunteers, becoming the voice and legs for technological advances, would move T^2 to places in the community where such information would be helpful. (Articles on the use of Technical Volunteers to provide technology transfer are presented for review in Appendix C.) Such a national program would allow scientists to remain involved in putting technology to work in the community no matter whether they changed careers, switched branches of Federal service, retired to a new location, or went to work for private industry. With the laboratory remaining the centralized unit for technology transfer, there would be a place in the Technical Assistance Program/Technical Volunteer Service for technically skilled participants from all walks of life.

The future might then see an engineer leading a seminar in a school of social work, the goal being to teach the potential advocate about new resources for solving social problems instead of merely servicing them. Government bilingual scientists might be loaned to engineering schools to fill the shortage of technical professors until such time as English-speaking instructors might be trained. There would be an aggregation of committed on-call scientists, allowing great flexibility in moving quickly to solve any technologically based problem at the community level.

A national Technical Assistance Program/Technical Volunteer Service would marry the American spirit of helpfulness to technical training and help the nation to move more smoothly and efficiently into its own technologically based future.

CHAPTER 2
THE TECHNOLOGY TRANSFER CONCEPT: AN OVERVIEW

This chapter discusses the technology transfer concept and the theories as to why and how it works. This information is particularly pertinent to understanding the grassroots processes that facilitate technology transfer at the local level.

TECHNOLOGY TRANSFER THROUGH VOLUNTEERISM

Technology transfer is a movement dependent on the personal interest and participation of individuals. Fueled by belief and energized by personal commitment, it is grassroots in the sense that laboratories respond more regularly to the technology needs of their own immediate locales rather than directives from headquarters.

There has always been room within this movement for originality, individual interpretation, and action. Technical expertise, a by-product in itself of working in the Federal Government research world, is a commodity readily accessible by phone to motivate requesters. Technical innovations move swiftly when a well motivated requester meets a capable researcher. Innovators on both sides of this equation, scientist and user, have brought technology transfer to the point where it is today.

Achieving technology transfer through volunteer-based Technical Assistance Programs/Technical Volunteer Services was an idea originated in 1978 at the Naval Underwater Systems Center and is now in effect at 11 other Federal laboratories. Such programs allow scientists and the technically skilled to participate in the technology transfer process in their own communities on a part-time basis.

The Technical Assistance Program/Technical Volunteer Service, an adjunct to the Office of Research and Technology Assessment (ORTA) at the individual laboratory level, brings technology home, so to speak, by introducing an engineer to the police department or a pollution control expert to the planning department of a local government. Technical assistants/volunteers provide the manpower to solve hometown problems by tapping into existing solutions within the vast Federal laboratory system.

When technical assistants/volunteers are considered as linkers in the technology transfer process, the process is as presented in figure 2-1.

Figure 2-1. Technology transfer process.

As noted by Creighton and Jolly (NPS-55CF 72061A, 30 June 1972) ". . . given equal resources, an effective transfer mechanism in the user organization will produce a higher coefficient of technology utilization than an intermediary, third organization placed between supplier and user." More can be read about the linker concept in Appendix D.

Technical assistants/volunteers inhabit both realms, the source (research laboratory) through vocation and the utilizer (user) by avocation or residence. The dual status allows the technical assistant/volunteer to overcome identified barriers to technology transfer. Figure 2-2 illustrates this.

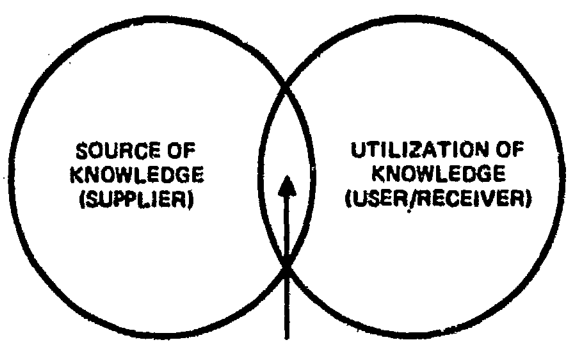


Figure 2-2. Technical assistant/volunteer role in technology transfer.

Thus TAP/TVS technology transfer works because the technical assistant, who is a member of the provider organization, the Federal laboratory, is also a member of the user organization as a local area resident and taxpayer. This duality is a keystone for technical assistance success.

INTANGIBLE RESULTS OF THE LINKER PROCESS

When technical assistants/volunteers donate their time to capitalize on workplace-developed experience, a number of things happen:

1) The Federal monetary investment in researcher, as well as research, gains secondary use.
2) No investment is required for third-party organizations to broker technology transfers.
3) Exposure to user organizations within the community makes the researchers more aware of the problems that need to be solved outside the laboratory.
4) As a local resident, a researcher's self-interest in community/business improvement is incorporated in the technology transfer process.
5) An informal reward system is established for the researcher.
6) A greater understanding of the laboratory's research mission and technical capabilities is promoted in the community, performing a constituency for laboratory support.
7) Early innovators self-select when technical assistants/volunteers come forward willingly. This increases the probability that ideas not only crosspollinate but transplant to other sectors of the nation.

BENEFITS FOR THE COMMUNITY

When technical assistants/volunteers donate their highly developed skills, benefits are as follows:

1) The community gains access to highly skilled technical specialists, access usually denied by budgetary constraints.
2) Community members (the users) gain confidence in their own ability to successfully utilize a transferred technology.

3) The community at large increases knowledge of a particular technology and develops a deepened belief in technological solutions.

4) Role models are provided for change, adaptation, and innovation.

Not every scientist is suited to be a technical assistant; however, for those who are and want to apply their skills in new ways toward a greater good, the technology transfer activity at a Federal R & D laboratory is an ideal place to serve as a human link between science and society.

CHAPTER 3
TECHNICAL ASSISTANCE PROGRAMS/TECHNICAL VOLUNTEER SERVICES: ORGANIZATION, ROLES, AND PRACTICES

This chapter looks at the variety of forms Technical Assistance Programs/Technical Volunteer Services can take with their structural organizations as well as their methods and practices within their own communities. This chapter also defines the roles of key participants in the TAP/TVS process and identifies those TAP/TVS administrative concerns pertinent to all laboratories.

ORGANIZATIONAL PLACEMENT

As can be seen from figure 3-1, the location of the technology transfer function within the overall laboratory organizational structure differs from laboratory to laboratory. The goal for each TAP/TVS program is to put technology to work in the local community. The laboratory's reasons for implementing that goal vary from the need to improve a laboratory's community image to the need to develop a local employee pool with better technical skills.

No single organizational chart for the individual TAP/TVS works best. However, every successful program does operate near top management. It carries out the long-range needs of the laboratory while meeting the national imperative to transfer research benefits and provide local technical assistance.

So long as these overall objectives are met, the placement of the program within the laboratory's organizational structure is optional.

Figure 3-2 illustrates the balanced goals of a successful Technical Assistance Program/ Technical Volunteer Service.

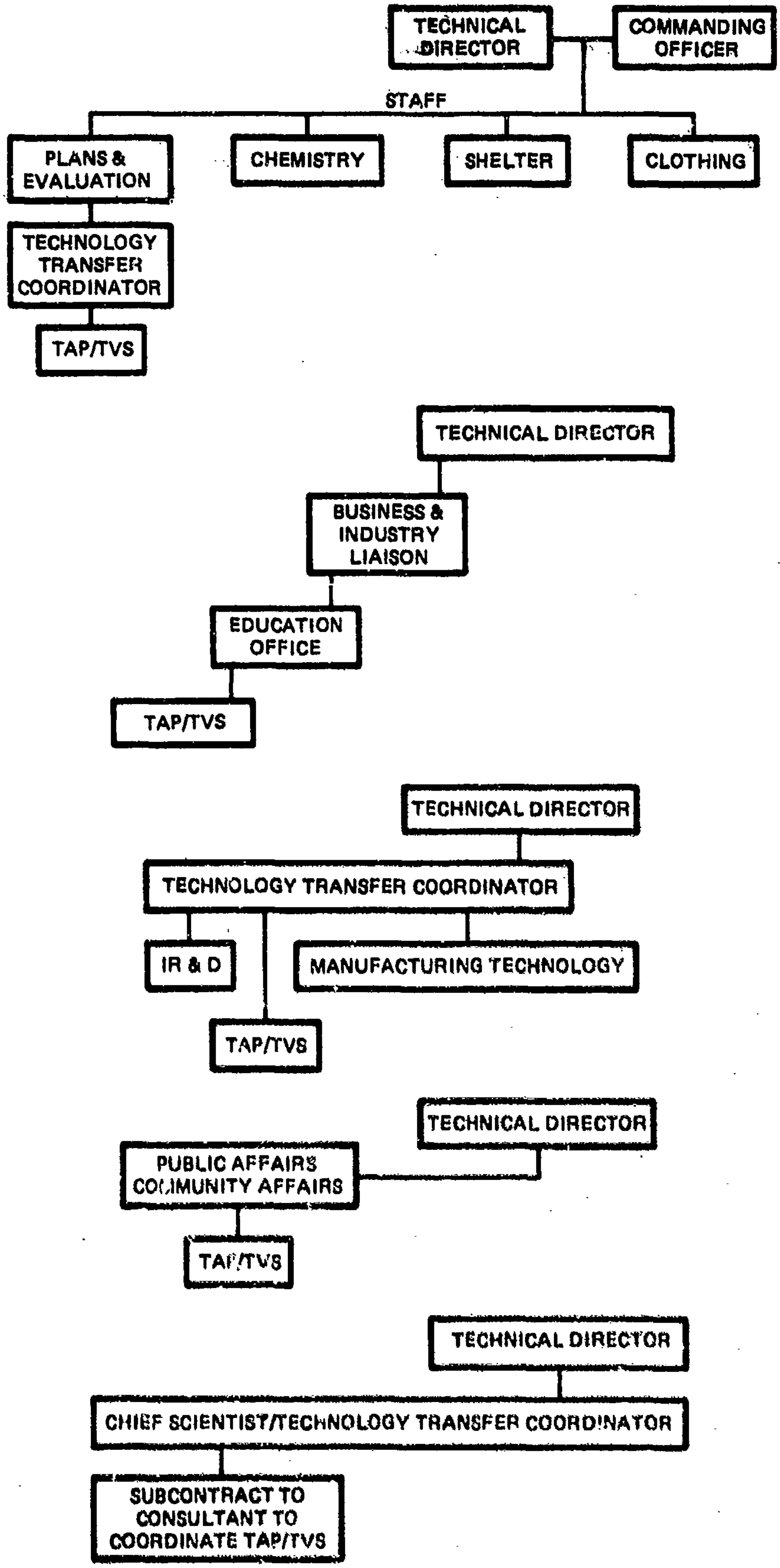


Figure 3-1. Sample locations of [illegible] offices and TAPs/TVSs within laboratory organizations.

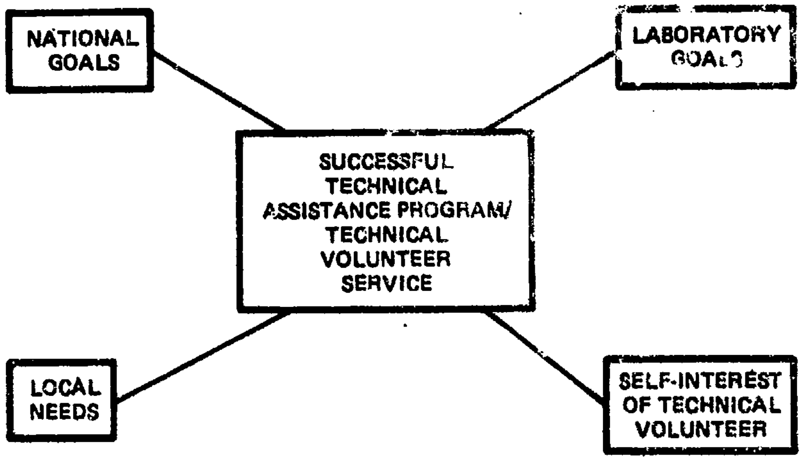


Figure 3-2. TAP/TVS goals.

TAP/TVS ROLES AND RESPONSIBLITIES

An effective TAP/TVS is dependent on the commitment and active participation of the T^2 coordinator, the TAP/TVS Coordinator, and the technical assistants/volunteers. The roles and responsibilities of these participants are described as follows:

<u>Technology Transfer Coordinator/ORTA Representative</u> –

- Responsible for surveying laboratory research activities with an eye toward identifying those with potential outside applications.
- Participates in Federal Laboratory Consortium, usually as a voting member.
- Responsible for interlaboratory technology exchanges.
- Moves local technology requests toward appropriate sources.
- Writes T^2 reports for agency-level use in Washington.
- Initiates programs that introduce new technology to businesses or other groups, and vice versa.

<u>Technical Assistance/Volunteer Coordinator</u> –

- Oversees TAP/TVS projects.
- Recruits volunteers.
- Develops community links.
- Educates technical assistants/volunteers.
- Passes technology-related problems and requests on to T^2 coordinator.

<u>Technical Assistant/Volunteer</u> –

- Provides the scientific liaison between community/user.
- Helps define user problems.
- Works as team member to solve user problems.
- Funnels technical resources of laboratory (in terms of knowledge or equipment) toward user and funnels user problems toward laboratory resources.
- Serves as a science advisor/problem broker for laboratory technology transfer program.

TAP/TVS LINES OF COMMUNICATION

Communication is as important in the technical assistance/volunteer network as in any organization, but special care should be taken to avoid the Federal government compulsion for paperwork.

Brevity and concise language are the watchwords of technical assistance. The goal is to inform the next layer of management structure, not to convince. Programs are operated under the basic assumption that what is being done is indeed worthwhile; continued funding or organizational existence does not depend on convincing the hierarchy that success has been obtained.

The steps that should be taken for efficient, effective communications are as follows:

1. The technical assistant/volunteer writes a one-paragraph report to the coordinator outlining the assigned project. This information is fine-tuned by telephone throughout the project with the TAP/TVS Coordinator.
2. The TAP/TVS Coordinator verbally summarizes all technical assistance projects to the T^2 Coordinator on a monthly basis. Face-to-face meetings of all concerned are held, as needed.
3. The T^2 Cooroinator reports to the laboratory director as required and provides a written report to the agency level, usually once per year, summarizing progress on all projects.
4. The agencies report to Congress every 2 years on matters of technology transfer as required by the Stevenson-Wydler Act. This may become an annual requirement with new modifications of the law.

TAP/TVS ADAPTATIONS TO LOCAL NEEDS AND CONCERNS

No two Technical Assistant Programs/Technical Volunteer Services are exactly alike. Each program has a special character that functions because it is organizationally dynamic and community responsive. Naturally, the laboratory's mission continues to influence the character of a TAP/TVS. The interaction between laboratory and community is influenced on one side by the technical resources of the laboratory and on the other by the complexity, makeup, and needs of the surrounding community.

The following paragraphs demonstrate the variety of applications of the TAP/TVS concept.

1) Cold Regions Research and Engineering Laboratory exists in a wilderness environment populated primarily by intellectuals with a stake in preserving that wilderness. The laboratory itself is small, with a history of using technological advances for the public welfare. Because the laboratory wanted to strengthen its ties with Dartmouth College, it created a TAP/TVS program that uses both university and laboratory scientists to conduct demonstration projects for local government.

2) Natick Laboratory has a long history of spinning research results out to corporate America where they become products for the general population (e.g., freeze-dried coffee). The technical assistance function as we know it, however, is a collateral duty and is driven by direct requests from the Boston Voluntary Action Center. In this respect, Natick's TAP/TVS experiences "technology pull" and is not required to make a major commitment to promoting community awareness and requests.

3) Harry Diamond Laboratory, one of the 14 Federal laboratories that ring Washington, D.C., exists in an atmosphere of highly competitive consultants. As a T^2 action leader within the Army and the FLC, this laboratory sees its role as an educational one, providing technical assistance to improve the quality of science education in the local school systems.

4) David Taylor NSRDC is the national repository for technical assistant/volunteer information within the Federal laboratory system. This organization aids new programs having startup problems. Its own technical volunteer activities focus on the needs of municipal government and the handicapped.

5) Los Alamos National Laboratory, a University of California-operated national laboratory, is located on an isolated mountaintop along with the town Los Alamos. Its TAP/TVS program allows technically skilled and the retired parents of its employees to participate in the program. Whereas the technology transfer focus at this laboratory is technology-to-industry, the TAP/TVS program focuses on local New Mexican economic development.

6) Naval Underwater Systems Center, creator of the first Technical Volunteer Service, is very active in the FLC and a leader in the use of the Intergovernmental Personnel Act to transfer technology. This laboratory decided to operate their Technical Volunteer Service without a full-time coordinator. They reorganized their volunteers into task forces that conduct TAP/TVS projects. Task force leaders delegate responsibilities, train each other as well as new members, and examine technical requests as a group. Task force members are assigned to projects based on skill, time available, and project requirements, with one or more members participating.

7) Lawrence Livermore Laboratory is another University of California-operated laboratory. Its TAP/TVS program is aligned with the community education department and addresses the technical needs of municipalities by using both current and retired employees.

8) Naval Air Development Center uses its own retirees to coordinate its TAP/TVS program. The program exists within one of the nation's most active technology transfer offices, solving problems of design, performance, and technical repair. This group works, for the most part, with a consortium of governments. Retirees are project leaders, but can call on current employees for technical assistance when necessary.

9) Rockwell International is a bomb production facility with a need to improve its local image. As a contract laboratory operated by a private company, it has a corporate donation program. Unlike all other TAP/TVS programs, it can join its technical assistance with real dollars to aid local communities and organizations.

10) Sandia National Laboratory conducts its TAP/TVS program for staff and retirees, as well as for members of their families. Sandia has an active transfer of technology with business spinoffs to local Albuquerque, one of the fastest-growing communities in the nation.

These brief outlines demonstrate the differences in methods and practices of Technical Assistance Program/Technical Volunteer Services and reinforce the idea of grassroots creativity. The shape of the program is directly related to internal, external, and participant

conditions. The question is "What do you want the program to accomplish and how should it get there?" Do what works best for you, your laboratory, and your community.

ADMINISTRATIVE CONCERNS

Whatever the overall goals and objectives of the TAP/TVS program, each ORTA must give careful consideration to establish policies regarding the following administrative details:

1) Reimbursement
   a) travel expenses
   b) out-of-pocket expenses
2) Laboratory access
   a) badge
   b) escort
   c) clearances
3) Library access
4) Contractor/consultant status
5) Insurance
6) Liability
7) Technical resources
8) Parking
9) Phone use
10) Desk space
11) Attendance at technical seminars by technical assistants/volunteers.

Policies regarding each of the above are as varied as the laboratories themselves. No matter what final decisions are made, it is critical that each section be decided before the TAP/TVS begins operation. This avoids potential problems and prevents confusion among participants.

CHAPTER 4
TAP/TVS: INITIATION, CONDUCT, AND COMPLETION

This chapter discusses how the requests for technical assistants/volunteers are received, how they are matched with the appropriate laboratory talents, and how the project is managed during its conduct.

THE MATCHING PROCESS

Matching a particular community need with the appropriately trained and qualified volunteer is a critical juncture in the TAP/TVS process. It does not happen automatically. The community-based user may not know exactly what expertise to ask for; the scientist/volunteer may wait to be told exactly what to do. Occasionally, an easy and perfect match is made. However, experience tells us that in most cases much "massaging" goes on between the time a technical request reaches the laboratory and the time when some definitive action takes place. Generally, a technical request and matching process goes through these iterations:

- The request is received by some member of the technology transfer office staff. It is screened to determine whether the general scientific specialty exists within the laboratory to solve it. If not, it is forwarded to a more appropriate laboratory. The requester is never told he/she will receive help, only that the laboratory will help if possible.
- Next, the request is screened to determine whether it can be met by local business capabilities. If so, that referral is made.
- If not, it is then determined whether the request is for information only or requires the personal attention of a technical specialist.
- In some cases, where the TAP/TVS program has existed for some time, the appropriate technical referral is outside the laboratory, such as when the current request duplicates a previously solved problem. The new requester is referred to those who have already received help from the TAP/TVS concerning a similar problem. Thus the TAP/TVS program does not continue to respond to the same request over and over. People who receive technical help are expected to give help to others when they have the ability to do so.
- If all previous tests indicate that a request should be passed on to a Technical Assistant/Volunteer, a search is made of the laboratory's skills bank, where survey information on potential technical assistants/volunteers is kept. Volunteers are assigned to projects by matching education, work experience, and special interest areas.
- When an assistant/volunteer request match is made, the problem is turned over to the selected Technical Assistant/Volunteer, who then performs a brief technical evaluation, usually by telephone. The requester still receives no guarantee of help, only an indication that his/her request is being evaluated.
- If the selected technical assistant/volunteer is not technically qualified for the project, he/she is expected to provide clearer information of the types of skill required by the project. This guides the TAP/TVS coordinator in making a more suitable match.

– Occasionally, the person with the best qualifications to solve a request is not signed up as a Technical Assistant/Volunteer. Often, when identified as best qualified to help, individuals not formally committed to the TAP/TVS will readily agree to take on the task. If they are too busy or disinclined to help, they can often provide the name of another qualified individual who might be willing to provide technical assistance.

PROJECT CONDUCT AND COMPLETION

Once the match is made between the qualified technical assistant/volunteer and the requester, the technical assistant/volunteer is given "project management" authority, with the knowledge that the ORTA office will support the project (with assistance – not money). The assistant/volunteer can expect that certain resources, such as databases, coworkers, and even laboratory equipment will be made available (when the loan of these resources will not interfere with mission requirements).

The technical assistant/volunteer assumes primary responsibility for the project. The TAP/TVS Coordinator may, on occasion, check with the volunteer and requester to determine progress and whether more, or different, help is required to move the project toward completion.

The Technical Assistant/Volunteer is given a project report form on which to record details of the project. On project completion, a one-paragraph summary is added at the bottom of the project report and includes an estimate of time spent and value of dollars saved by the technical assistance provided. These progress reports are used to compile both a monthly newsletter to all participants and users, as well as the annual report needed at the agency level.

The TAP/TVS newsletter serves as an educational tool for both volunteers and users. Technical specialists see what is being done and can be more alert to opportunities in their own neighborhood environments, while community users can see the kind of solutions technology provides elsewhere. Samples of newsletters are available for review in Appendix E.

Special projects of merit may be recommended for the national "Volunteer of the Year" award. Winners in this category receive lunch at the White House and a silver medallion personally presented by the President. To date, the nation's TAPs/TVSs have had one national individual winner, and two laboratory citations, the latter equated with honorable mention. (See Appendix E.)

CHAPTER 5
BARRIERS AND CONSTRAINTS TO THE TECHNOLOGY TRANSFER PROCESS: SOLUTIONS

This chapter identifies those constraints and barriers which can inhibit effective technology transfer through the TAP/TVS concept. The chapter also addresses specific attitudes that can stand in the way of technology transfer and provides responses to overcome such barrier attitudes.

ORGANIZATIONAL CONSTRAINTS

Although it is mandated by law, technology transfer is not always in the formal sense, a fully funded function of the Federal Government, such as the National Aeronautics and Space Administration. Government officials are not judged on their technology transfer performance, nor are they rewarded within the system for specific T^2 accomplishments. There is no designated career track within the Civil Service for technology transfer.

Such lack of definition, funding, and responsibility leave the survival of the technology transfer concept to the personal commitment of interested individuals and their American proclivity to "make things better." Fortunately, in many cases, highly skilled and knowledgeable scientists have been attracted by the opportunity for personal creativity and have opted to give up financial rewards for the more personalized satisfaction present in the technology transfer movement.

Unfortunately, in some cases, laboratories use the ORTA position as a place to park deadwood on the way to retirement. Too often, such individuals are no longer inflamed by ideas but are simply marking time. Without a champion, a directive, or funding, technology transfer at such a laboratory remains inert.

PERCEPTUAL BARRIERS

Two perceptual (mindset) conditions can exist inside a laboratory to inhibit the transfer of technology. One is the "not invented here" syndrome. This tendency to mistrust the research of outside organizations results in a lack of experience in searching out existing answers elsewhere. This condition is directly responsible for a major technology transfer imperative: "Don't reinvent the wheel."

The second condition is functional fixedness: the tendency to think only in terms of an item's current defined use, particularly the inability to perceive of applications for technical knowledge in the nontechnical world. Such fixedness can result from a scientist's inherent isolation from the full spectrum of social sectors.

Only a scientist who is also a volunteer fireman would understand the need for a paint that prevents fire hydrants from freezing shut. Only a person with a close association with the nonvocal handicapped would think of using computers to help them "talk." Only people who are frustrated by efforts to speak in acoustically "dead" rooms would be motivated to make improvements to eliminate the acoustic problems. Only those who relate to the wheelchair-bound understand their traction problems in inclement weather. For many people, it is hard to imagine the needs of groups with which they have no familiarity. It is also hard to begin to think of new ways to use existing products without encouragement from formally recognized programs.

Technical assistance/volunteerism, by exposing the scientist to society, increases the chances of diverse problems meeting existing solutions. Hence it inhibits functional fixedness.

SOCIAL CONSTRAINTS

Not all technical experts are socially skilled and much damage can be done to the progress of technology transfer, the reputation of the laboratory, and the motivation of the volunteer if the social/expertise roles are mixed. In a person-to-person program such as TAP/TVS this can mean that knowledge remains locked up until a more socially skilled technologist becomes the pipeline. For example, a small businessman is not interested in conversing with a technical expert if he can't elicit the necessary specific information he needs but receives instead a brain dump of irrelevant data. It is important to make distinctions among the different types of technical assistants/volunteers.

FUNDING CONSTRAINTS

The budgets of municipalities act as constraints to technical assistance. The research laboratory associate is often accustomed to large budgets and state-of-the-art equipment. Neither exists at the local level, where taxpayers keep an eagle eye on the budget line items. The technical assistance/volunteer must be in touch with this reality. The ultimate solution may be too expensive, and "over-engineering" may not be cost-effective.

DISCONNECTED LABORATORY/COMMUNITY RELATIONS

Federal laboratories, particularly military laboratories, have little experience interacting with the communities in which they are located. There are several reasons for this, security being the foremost. Literal and figurative fences around the periphery of a research installation discourage neighbors from dropping by. Internal security indoctrination warns against discussion of work in progress with outsiders.

In addition, even though laboratories hire local professionals to do their work, both the boss (funding source) and the customer are elsewhere. Researchers travel constantly, to Washington, D.C., or to field sites where they do hands-on experiments. Rarely do they interact with locals except for subcontractors, who are also under similar security constraints.

An aura of importance surrounds the laboratory, inside and out. Researchers themselves are focused on the cutting edge of technology. Local people, without specifics, fall victim to mysterious stereotypes of research and government work.

The laboratory/community relationship is, therefore, respectful but reserved. Unless one is sensitive to these variables, one will not understand why technology transfer/technical assistance programs can be slow to start and can easily break down. As a result, a technical assistant/volunteer is like a first-time ambassador to a foreign country. To be more cognizant of the attitudes on both sides of the laboratory fence is to be better prepared to deal with them.

The following paragraphs discuss those attitudes, held by the community population, laboratory personnel, and even the interested technical assistant/volunteer, which can be barriers to the technology transfer process. Ways to dispel those attitudes and eliminate the barriers are offered for consideration and use.

Barrier Attitudes Within The Community

1. "So you're from the Federal Government and you want to help us?"

For the past 20 years, a proliferation of Federal programs have arrived with hoopla, carried on a flurry of activities, and then dissolved just when people became dependent on them. In general, the larger population lacks a basic trust in the involvement of the Federal

Government in their lives. The best way to dispel the effect of this attitude is to accept this distrust and even humor it. Be upfront in talking about the shortcomings of Federal involvement in private concerns, until such time as your TAP/TVS develops the experience base the community can trust.

2. "How can we use a submarine?" (Or any similar high tech product?)

The larger population tends to view research results as products, not knowledge. For example, a Navy laboratory's community thinks of the laboratory's resources in terms of boats, submarines, and torpedoes. An Army laboratory is equated with guns, tanks, and helmets. If the laboratory's mission is underwater systems, the average person conjures up visions of habitable rooms on the ocean floor. In the case of a materials laboratory, the image is of silt, gravel, or perhaps even cloth.

One way to ameliorate this attitude is to talk about the kinds of professionals that work in a laboratory: engineers, acousticians, mathematicians, or chemists. Experience shows that it is easier (although still not easy) for nontechnical people to relate to technical professions.

3. "Why are you suddenly interested in me?"

The average person has never heard of the Stevenson-Wydler Act nor the concept of technology transfer. Immediate suspicions arise when you talk about efficiency and effectiveness. Nontechnical people may suspect that their bosses are unhappy with their work performance and have sent you to fix the problem. To talk in general terms about a national need to get a greater return on the taxpayer's R & D dollar relieves the fear that people's own shortcomings have spurred your interest.

4. "Am I stupid or something?"

The specialized language of any profession tends to exclude those who don't understand it. The technical professions are no different. The average nontechnical person is afraid to converse with the technically trained. First, they fear the problem is really simple and they <u>should</u> know how to fix it; or, if they are successful in stating the problem, they often don't understand the answer when it is presented in technical terminology.

5. "You'll make me look bad."

Many candidates for technical assistance fear appearing less accomplished than their peers. It takes a great deal of self-confidence to say, "I don't know," and even more to begin actively searching for an answer. That isn't necessarily true inside a research organization, where the corporate culture is built around admitting the unknown and searching for knowledge.

Researchers who want to become technical assistants/volunteers must clearly understand this. Sometimes the mayor or city manager is the initial requester who then delegates the project to a subordinate. This can mean a situation where the technical assistant/volunteer works with someone less motivated to <u>solve</u> the problem than the original requester.

Barrier Attitudes Inside The Laboratory

1. "Why would you give away what you can sell?"

Scientists not geared to volunteerism often ask this question. But people volunteer their technical expertise to the community at large for a variety of reasons:

– A lack of personal gratification in long-term military research.
– Boredom with the role of contract administration and a desire to freshen technical skills.
– The desire to meet new people.
– The desire to explore a career change.
– The desire for a new topic for a journal article.
– A feeling of uselessness in retirement.
– The desire to become part of the laboratory culture again and renew acquaintances, both professional and personal.
– The opportunity to manage a project from beginning to end.
– The chance to use hobby skills.
– The opportunity to make America better.
– The hope of reducing taxes.
– Loyalty to the Government.
– Escape from household chores.
– The hope of developing a part-time job.

Some of these reasons are altruistic and some self-serving. Either type of motivatio is equally effective in putting technology to work in the community, and we should not fal into the trap of feeling that one is honorable and the other is not.

If a person volunteers for several projects and later develops paid consulting work as result, this is a positive result. The economy is stimulated, reliable technical skills are showcas for a user who needs them, and new markets are developed where none previously existed.

2. "This kind of work interferes with the mission."

Some serious researchers inside laboratories feel that any energy not directly relate to the mission diverts attention from the mission. Such critics are reassured by pointing ou how technical assistance projects help to develop new technical and managerial skills that actually benefit the mission.

Barrier Attitudes Held By Potential Volunteers

1. "A request for technical assistance must be the first priority of the requester; otherwise, there would be no request for help."

This is not necessarily so, particularly with municipalities. Priorities change with politics and current emergencies. In most cases, the requester sets the time schedule. A request that is urgent one day may be forgotten for weeks or months, only to become urgent again at a later date. Such fluctuation is normal.

2. "I don't want to assume technical liability."

You don't. The head of the requester organization signs a harmless agreement. As a technical assistant/volunteer, you are only part of a <u>team</u> to solve problems.

3. "I can only solve well-defined technical problems."

Requesters often need help defining and formulating their problems. Because technical assistants/volunteers come to each project as unbiased professionals, they are oft able to solve underlying problems. For example, a municipality was having trouble sizing i computer needs. When the technical assistant/volunteer stepped in, he asked that the mun cipality first determine whether the police department or the finance department was in charge of the computer. Once that issue was settled, the size problem disappeared; the pro blem wasn't so much technical as an unaddressed conflict between rival department heads.

4. "I don't have time for long-term involvement."

A long-term involvement is not usually required. Many requests for technical assistance can be answered with a single phone call; the average involvement is for 3 days. However, it often happens that a personal relationship develops between assistant/volunteer and user that establishes a hand-holding or "Can I call you when I need you?" agreement.

5. "How can my technical knowledge have any application to the problems of the community?"

Most technical assistants/volunteers will either be currently employed by, or retired from the Federal laboratory in whose TAP/TVS they participate. This means they know the corporate history, who worked on which research project, the unique qualities, and special talents of particular individuals, the power points of that organization, and what help would or would not be available inside the laboratory organization.

What technical assistants/volunteers don't know, however, is how this information can be made useful to potential users. That knowledge is accumulated through contact with outside organizations. For example, when sideward-looking sonar was developed, it wasn't envisioned that it would be used to find historic wrecks in the Great Lakes, sunken oil tankers in Long Island Sound, or diamonds in South African rivers.

6. "I'm retired. I may be a little rusty."

Retirees have been away from the laboratory environment for a while. Therefore, they need to be updated on new research thrusts, introduced to new department heads, and be given a tour of the facility.

CHAPTER 6
TAP/TVS DEVELOPMENT AT THE LOCAL LEVEL: AN EXAMPLE

This chapter presents the story of how the first technical assistance program developed at one laboratory, the Naval Underwater Systems Center. Insights are provided into the initial problems encountered and the adaptations made to fit the program to local community needs. Since it is the oldest and best-known example of a TVS program, its history should provide useful information.

When the concept of technology transfer began, distrust of Federal programs was at its height. Community officials were direct and scathing in their response to proffered assistance from Federal R & D laboratoies:

- We don't want another program that comes in, raises people's expectations, and then disappears when the funding ceases.
- Government workers are deadwood. Who wants help from them? They only stay in Federal laboratories because the aren't creative enough to be hired by private industry.
- Why do you suddenly want to help me?
- All that technology is fine for you with all those fat budgets supported with tax dollars. We don't have that kind of money!!
- Scientists may be smart but they don't have any common sense. I need practical solutions to real problems.
- Laboratory research is diabolical; you only come to us because you have a guilty conscience.

These were attitudes expressed toward Federal government laboratories in 1978. Clearly, "providing technical assistance to state and local governments," an option spelled out in the Navy regulation, would not be easy.

Negative community attitudes was one side of the problem. The second thing that initially stopped T^2 progress was the edict that laboratories were to operate in the "technology pull" mode. That meant there was to be no active, internally directed program at the laboratory level to showcase, market, or entice users toward existing technology. Policy makers determined that, if a real need existed, users would come looking for help. In a world not influenced by past Government ineptitudes, that might have been true. In 1978, previous experience had generated suspicion and distrust.

The Naval Underwater Systems Center was, at that time, a leader in action-oriented projects that demonstrated the value of technology transfer to state and local governments. With underwater communications the central mission specialty, the T^2 management at NUSC was innovative in finding ways to apply that knowledge to the outside world.

The National Science Foundation funded NUSC to do several demonstration projects. They were accomplished via Intergovernmental Personnel Act assignments. (The IPA mechanism allows for a temporary transfer of personnel out of or into the laboratory to accomplish specific assignments of predetermined length and scope.) The tasks of various IPA assignments were:

1) A systems analyst worked with the New York City Police Department to create an automated fuel-dispensing system for their vehicles.

2) An information specialist worked with five Ohio municipalities to conduct joint training of police/fire/emergency medical technician on local closed-circuit TV.

3) A heating/ventilating/air-conditioning engineer worked with the Rhode Island Energy office to establish energy audit standards.

4) A scientist was assigned to the Connecticut legislature to provide technical input to legislators relative to pendir · legislation.

5) A political scientist from the New York State Assembly came into NUSC to advise on intergovernmental activities at the state level.

6) An engineer served as a "circuit-riding" science advisor to mayors and city managers in six key Western cities.

Each of these projects was successful insofar as the technical advisor was able to integrate him/herself into a team with the existing local hierarchy. Specifically, the projects worked best when the technical assistant disclaimed the "out-of-town expert" role and concentrated on how to add a technical dimension to existing initiatives.

In 1978, NUSC, already leading the way in national and state technology transfer projects, decided to enter the next level of technology transfer intervention -- local government or technical assistance.

The first attempt was to conduct interactive seminars with invited local officials. The first seminar introduced stereoplotted mapmaking. This technique allows maps to be made by computer, using information gained from aerial flyovers. Officials were impressed and even overwhelmed, but reality became quickly apparent in their comments. "That is wonderful technology. We would love it. It is quite space age. However, we are all the way back in the caveman era -- without computers."

One more interactive seminar was held: a financial management seminar for municipal finance directors. The laboratory had received information that, because of a lack of knowledge, small towns didn't know how to develop line-item budgets. During the seminar, it was discovered that this lack of clarity was intentional, a political tool that allowed the top executive a great deal of latitude in managing municipal funds. The towns didn't want a line-item budget that carefully tracked expenditures for taxpayers.

The NUSC technology transfer office learned from those first two seminars that the technical assistance required by the average local government was not pioneer state-of-the-art information, but advice and guidance on more mundane issues such as: which two-way radio is most cost effective for this specific police department? How does one keep pothole patches in place on a multiseasonal road surface? What do I do with employees who are afraid of computers?

These kinds of problems, considered low technology, are usually very easy for a technically skilled person to solve. The surprise was that laboratory scientists enjoyed doing it.

The expectation was that such projects would bore highly skilled researchers. The opposite was true. They enjoyed the interaction with municipal organizations, and also felt themselves to be saving tax dollars and using workplace skills constructively rather than for destructive purposes (particularly true for military laboratories with weapons research programs).

Thus, the TAP/TVS was adjusted in response to the following:

- negative Federal image
- agency-level policy not to "push" technology
- diversity within local governments
- low-level technology needs of communities
- mistakes in assessing community technology needs.

It was theorized that a people-to-people program, scientist to community user, would establish a dynamic relationship through which technology could flow: A scientist has a vested interest in his own community and a local user would be less intimidated by a neighbor who happens to be a scientist.

The theory worked. Technical assistants/volunteers formed teams with community users. One side brought the scientific/technical knowledge, the other brought specific knowledge about the history, environment, and local resources available to solve problems. Mutual respect developed and mutual respect became the basis for the success of numerous technical assistance projects. For greater detail about the development of this particular TAP/TVS organization, refer to NUSC Technical Document 6719 in Appendix F.

CHAPTER 7
BECOMING A TECHNICAL ASSISTANT: GUIDELINES FOR THE SELF-LEARNER

This chapter provides some guidelines for the individual technical assistant/volunteer for identifying potential talents to be applied to the TAP/TVS process and regarding TAP/TVS responsibilities. Also provided are review materials for the self-learner.

CREATING YOUR OWN ROLE

As a potential technical assistant/volunteer, you need to understand that you are the creative link to what happens in the technology transfer process. The laboratory is unique in terms of mission, ability, professional makeup, locale, etc. The task of a cadre of technical assistants/volunteers is to translate this capacity into usefulness at the local level, to put technology to work in the community. This translation is an exciting challenge. It offers the opportunity to put the best-qualified individual together with a special problem.

Because of the creative, open-ended nature of the technical assistance process, ask yourself the following questions as a means to identifying your particular role in the process.

- What is your educational background?
- What is your career experience?
- What is your life experience?
- What do you hope to get out of participation in this program?
- What do you see as the most immediate need in your community?
- What special interests/talents do you have?
- What amount of time can you give to this TAP/TVS program?
- What can you do better than anyone else using all that you are and know to improve the community in which you live?

When you are ready to make the commitment to the potential of this creative process, fill out your volunteer form. (Sample shown in Appendix G in the Lawrence Livermore National Laboratory TVS-report.) Take it to your laboratory ORTA office. Explain how you see your own participation in the program and ask these questions:

1) What happens next?
2) How will I be informed of progress?
3) When can I expect the next contact?
4) Is there anything I can do to help <u>start</u> the program?

Then you'll be on your way to serving yourself, your community, and your laboratory.

TAP/TVS RULES AND REGULATIONS

There are no definitive rules and regulations for the Technical Assistance Program/Technical Volunteer Service. However, there are guidelines all participants should follow to preserve the intent of the program and the integrity of the assistance given. These guidelines are:

– "Don't compete with small business."
– "Don't impede the laboratory mission."
– "Don't promise an answer until you're sure you have one."

RESPONSIBILITIES OF THE TECHNICAL ASSISTANT/VOLUNTEER

As a participant in the technology transfer process, you have the following responsibilities:

– To become familiar with the laboratory's internal resources and the goals of technology transfer as practiced by that laboratory.
– To have some general knowledge of what the Federal Laboratory Consortium offers in the way of resources.
– To establish personal guidelines for availability and for expertise offered as a technical assistant/volunteer, and to make the program manager aware of same.
– To be alert to opportunities for technology transfer in all circles in which you move.

GUIDE FOR THE SELF-LEARNER

An understanding of the history of technology transfer, its imperatives, the Federal laboratory system, and the Federal Laboratory Consortium will increase your value as a local volunteer. Your technical skills will be your community's link to billions of dollars worth of completed research and over a 100,000 technical specialists employed by the Federal laboratory system. Remember when you are considering your role as a potential technical assistant/volunteer that you have years of technical training and experience, and that other Federal laboratories employ counterparts to yourself with different technical capabilities. These people are also available to you for consultation through the Federal telephone system. When you are involved in a TAP/TVS project, consider yourself the project manager on local problems assigned to you and consider yourself in charge of a far-flung staff of experts.

A wide range of material (including audiovisual presentations) have been compiled or cited in this manual for your review. The material most appropriate to you as a self-learner is listed at the end of this section.

Take the time to review the supplemental materials, view the videotapes, and read all the articles provided. Other material is available through the Technical Volunteer Data Bank at DTNSRDC, Bethesda, MD. In addition, working with your Technical Assistance/Volunteer Coordinator, your ORTA representative, the local laboratory librarian, and the FLC network, you can get just about any technical information you need to solve a problem.

The more you know about the available resources, the greater the range and depth of assistance you can provide your community.

1) Read: Legislation PL 96-480 – The Stevenson Wydler Technology Innovation Act of 1980. (Located in Appendix A).

   This is the enabling legislation for technology transfer and the technical assistance programs.

2) Read: Revisions to PL 96-480, November 1985, summary by Dr. Eugene Stark, Los Alamos National Laboratory, Chairman of the Federal Laboratory Consortium.

This summary outlines how new legislation, which is expected to be passed in 1986, will be different from the previous legislation.

3) Review: viewgraphs, "The Stevenson-Wydler Technology Innovation, October 1980, Public Law 96-480, The Federal Laboratories and the Federal Laboratory Consortium for Technology Transfer."

   These viewgraphs explain the law and the FLC in summary form.

4) Read: article, "The Linker Role in the Technology Transfer Process." M.E. Essoglou, Naval Postgraduate School, Monterey, CA. PL96-480-Text (located in Appendix B).

   This article discusses the theoretical relationships and roles played by all parties in the technology transfer process.

5) View: videotape, "The Federal Laboratory Consortium, Sen. Schmidt, et al."

   This videotape shows the FLC's relationship to Stevenson-Wydler.

6) View: videotape, "The FLC Spring Meeting – Science for Society," Claira Monier, regional director, DHHS.

   This videotape presents the view of potential technology users, asking engineers and scientists for help with specific technically based problems.

7) View: slide show, "The Technical Volunteer Service."

   This automated slide/tape show presents activities of the original program at the Naval Underwater System Center and shows technical volunteers busy with actual projects.

8) View: two-part videotape, "Les Cory Presents His Communication Devices for Non-Vocal People" and "Judy Holt Explains A Mother's Role as Part of the Technical Assistance Team."

9) Articles and newsletters (contained in Appendix E).

   These highlight TAP/TVS projects as well as awards given for outstanding technical assistance projects.

If you're interested in exploring technical assistance further, review the additional resource data contained in the appendices of this manual. Also review the articles and documents listed in the bibliography given for this manual.

CHAPTER 8
TRAINING TECHNICAL ASSISTANTS: INSTRUCTOR GUIDELINES

This chapter provides guidelines for the potential TAP/TVS instructor and offers suggestions for specific training activities.

Each TAP/TVS develops a character of its own because of the creative blend of laboratory expertise and community requirements. Although this means a healthy, dynamic condition for the program and encourages local growth, it makes "training" for technical assistants/volunteers very difficult. The job is not to teach them how, but to open the door marked "opportunity."

THE IMPORTANCE FOR TAP/TVS PARTICIPANT TRAINING

Technical assistants/volunteers must become cognizant of the FLC network that links them to every current scientific discipline as well as the nation's vast storehouse of completed research. Together, these resources provide powerful help to the team or individual, working to solve problems in places like the Idaho desert or a small town in Mississippi. A technical assistant's/volunteer's usefulness is increased exponentially when backed by billions of dollars worth of Federal knowledge and experience and the skills to access the same.

MOTIVATION FOR TAP/TVS INVOLVEMENT

To be successful, technical assistance must be experienced as the fulfillment of some self-interest by participating scientists. That self-interest can be as diverse as testing a pet workplace theory, creating material for a journal article, the development of private consulting opportunities, the need for personal impact, the opportunity to manage a project from start to finish, or even the pursuit of an avocation. Whatever the impetus that created an interest in technical assistance, its fulfillment must be perceived as a realizable objective to maintain the initial interest.

An instructor training technical assistants/volunteers should understand that motivations for volunteering vary, and they should get the message across that all motivations are acceptable.

The technical assistant/volunteer expects to receive a benefit from the investment of his/her time other than the traditional payment of wages. Sometimes, those inexperienced in the field of volunteerism forget this fact. They ask the question: Why would an engineer or scientist "give away" that which they could get paid for? The answer is that, as technical assistants/volunteers, they do receive "payment." It just isn't in dollars and cents.

OVERVIEW OF TRAINING TECHNIQUES

You will be training engineers, scientists, and the technically skilled. Their experience is with the organized presentation of vast amounts of material in rotational, controlled, and unfortunately often very dry sessions. Instructors should develop the training day by using a variety of materials to keep participants interested and involved in the subject.

In addition to visual media, it is suggested that you explain and use written materials to augment the message. Sample materials are located in the appendices of this manual. Review these for potential use as hard-copy handouts.

Group participation and involvement must be fostered from the start. Your job as a trainer is to involve the participants as people, not just scientists. Dr. Eva Schindler-Rainman's book, "Taking Your Meetings Out of the Doldrums," is recommended reading for planning your training sessions. Scientists respond positively to its approaches to people-oriented meetings.

TAPS/TVS: THE TRAINING GOALS

The goals of the Technical Assistance/Volunteer Program are multifold. Hence the goals for any TAP/TVS training program will be numerous and diverse. Some of these goals are:

- To establish a conceptual framework for technical assistants/volunteers, with T^2 as the central organizing theme.
- To encourage commitment to the concept of technology transfer.
- To reassure participants that even self-interested reasons for participation in a TAP/TVS program are acceptable.
- To encourage participants to think of the larger community as a variety of technology users.
- To personalize participation/responsibility.
- To orient the technical assistant/volunteer to existing backup resources and potential user communities.
- To instill enough confidence for technical assistants/volunteers to be experimental.
- To get participants to consider the uniqueness of what they have to offer the TAP/TVS program.

SPECIFIC TRAINING ACTIVITIES

The remainder of this chapter features specific training activities the instructor can use to generate interest in technology transfer and technical assistance concepts and to acquaint potential technical assistants/volunteers with information useful to them in the TAP/TVS process. Each activity is presented on a separate sheet for ease of use during training sessions.

ACTIVITY #1

TOPIC: Technology Transfer

OBJECTIVE: To demonstrate the real-world results of technology transfer

METHODOLOGY: Group interaction and show-and-tell lecture

MATERIALS: Chalk board or lecture pad.

Group Interaction

Have each participant give his/her name, tell why they came to the session and give one example of change/accomplishment brought about through the use of their technical skill (e.g., jobs completed, hardware designed, greater efficiency, effectiveness, etc.).

Show-and-Tell Lecture

Gather the following items and present them in a formal lecture to emphasize how Federal research generates:

Products:

freeze-dried coffee – designed for Army messkits
heart pacemaker – design made possible because of advances in power supply technology for space capsules
ceramic cookware – material originally created to keep space capsules from incinerating on atmospheric re-entry
bulletproof vest for police – developed to protect Army personnel from enemy fire.

Processes:

algorithms for radialkerototomy – mapping technology used in this vision improvement surgery
pion radiation for brain surgery – resulting from fusion/fission research
computers – originated to perform rapid calculations for weapon telemetry.

Efficiencies:

Improved management planning techniques – developed for use during major World War II offensives

Initial applications of state-of-the-art products

Active problem-solving methods.

Closing Statement: "Technical assistance is a legitimate subgroup of technology transfer. Any effort that encourages the use of technology and reduces technophobia makes the environment more receptive to technology and, thereby, promotes the process of technology transfer."

ACTIVITY #2

TOPIC: Federal Laboratory Consortium

OBJECTIVE: To introduce the FLC and its TAP/TVS-related resources

METHODOLOGY: Viewgraph briefing and videotape

MATERIALS: Overhead projector, viewgraphs (located in Appendix B), FLC Brochure (sample located in Appendix B), and VCR with monitor.

Summarize Federal Laboratories:

- 779 laboratories.
- belong to every agency of Federal government: military, agriculture, HHS, energy, etc.
- employ over 100,000 scientists and engineers in every technical specialty.
- spend $53 billion annually on research and development activities.
- are scattered across the nation in almost every state.
- are generally organized to serve a single mission requirement of their sponsoring agencies.
- The Federal Guide to Technology Transfer, available through NTIS, provides in-depth look at all these laboratories.
- too many to contact individually, but it is helpful to become aware of the variety of research foci.

Reinforce that the kind of information above is available through the ORTA office.

Federal Laboratory Consortium facts:

- formalized in 1974.
- over 130 laboratories belong.
- each member lab has a person responsible for T^2, even if only as a collateral duty.
- U.S. divided into six regions, each with its own coordinator.
- representatives from 11 Federal agencies.
- network serves as a national pipeline into laboratories.
- regional coordinator is access point for persons unfamiliar with contact at individual laboratories.
- twice-yearly meetings at rotating sites.
- governed by executive committee.
- officers elected by general membership.
- supported by membership dues, grant from Army, profits from meetings.
- a quasi-Government organization.

Hand out newest FLC brochure (updated annually).

Show Videotape: "The Federal Laboratory Consortium and the Stevenson-Wydler Act."

ACTIVITY #3

TOPIC: Creative Thinking in Technology Transfer

OBJECTIVE: To create understanding in participants that existing solutions can be introduced to new environments and that problems from these different environments can be presented to Federal labs for solution

METHODOLOGY: Small-group brainstorming

MATERIALS: Pencil and paper for each participant.

SUBJECT: Where could this product be used?

Possible items to consider –

a) paint that prevents ice adhesion.

b) a spray that makes sand/dirt as hard as concrete.

c) a low-voltage electric stimulator that prevents the formation of rust.

ACTIVITY #4

TOPIC: Technical Assistance Programs/Technical Volunteer Services

OBJECTIVE: To introduce the concept of formal technical assistance/volunteer programs

METHODOLOGY: Videotape review and discussion

MATERIALS: VCR and monitor.

Show video of "Technical Volunteer Service." This tape demonstrates how one laboratory applied its mission specialty to local problems.

Following presentation, reinforce the following:

- Technical assistants/volunteers are engineers and scientists employed at, retired from, or otherwise associated with ORTA offices at Federal laboratories. For example, at Los Alamos Laboratory, parents of employees, retired from General Electric or similar organizations and living with children, participate in the TAP/TVS program.

- The transfer of the scientific results of Federal R & D agendas is the central force behind technical assistance/volunteer programs.

- Technical assistants/volunteers cannot compete with small business.

- Technical assistants/volunteers provide cost-effective technical assistance because no manpower charges are involved.

- They can strengthen the American education system, make local government and business more productive.

ACTIVITY #5

TOPIC: Who Needs Technology?

OBJECTIVE: To demonstrate the breadth, depth, and variety of technology transfer users within the local community

METHODOLOGY: Group discussion

MATERIALS: Pencils and paper, newsprint and marker.

Hand out pencils and paper, and have group members list every organization, small business, social service group, or individual in a community that might benefit from technology in the segments provided.

The list can be written down on newsprint by a group leader and posted in the room. Starter suggestions might be:

- public works departments
- police
- fire
- school-bus company
- small manufacturers
- Red Cross
- high-school math classes
- computer club
- handicapped individuals
- sheltered workshops
- the elderly
- shipping industry
- water departments
- utilities
- personnel offices
- word-processing sections
- purchasing agents
- town clerks.

ACTIVITY #6

TOPIC: Summary of Topics Previously Covered

OBJECTIVE: To reinforce learning

METHODOLOGY: Group participation

MATERIALS: Newsprint and marker.

Have group write down their answers to the following question: "What new thing did you learn today?" Pass materials around the room.

ACTIVITY #7

TOPIC: Overview of Technical Assistance Programs/Technical Volunteer Services

OBJECTIVE: To introduce the TAP/TVS concept

METHODOLOGY: Lecture/briefing

MATERIALS: Chalkboard and chalk or lecture pad.

Present and discuss the following facts about Technical Assistance/Volunteer Programs:

- Established as a cost-effective way to provide technical assistance for local problems.

- First program established in 1978 at Naval Underwater Systems Center.

- Eleven programs either exist or are emerging at Navy, Army, Energy, and Commerce laboratories.

- Some 2,000 persons actively employed and retired have indicated a willingness to participate in these programs as technical assistants/volunteers.

- The kinds of technical assistance provided tend to fall in line with the mission specialty of individual laboratories.

- Volunteers do <u>not</u> take on projects that compete with small business.

- Volunteers may respond to requests from businesses, state and local government, nonprofit organizations, and, in certain cases, individuals.

- Projects tend to be of a short-term, one-shot nature, but can be longer if the technical assistant/volunteer agrees.

ACTIVITY #8

TOPIC: The Differences Between the 11 Existing Technical Assistance Programs

OBJECTIVE: To help participants understand the unique qualities of both the laboratory and community environments and the dynamic nature of the way they interact

METHODOLOGY: Group discussion

MATERIALS: Newsprint and marker.

Have the group describe their laboratory, considering the following:

1. Organizational placement
2. Management
3. Laboratory goals
4. User community
5. Participants.

Write down answers on newsprint.

Participants will be expected to come up with the following kinds of characteristics:

Sponsoring agency
Mission specialty
Size
Research agenda
Customer
Preponderant technical specialties, etc.

Have group describe their community. Participants should consider the following characteristics of the community:

Size
Urban, rural
Type of government
Attitude
Demographics
Conservative/liberal
Economic base
Tax structure
Quality of life, etc.

ACTIVITY #9

TOPIC: Community Needs for Technical Assistance

OBJECTIVE: To encourage participants to think in terms of community needs and laboratory resources

METHODOLOGY: Small group brainstorming

MATERIALS: Pencils and paper, 6 months of local newspapers.

Break up into small groups and have each table identify the major problems in their community after reviewing the last 6 months of local news headlines.

Bring participant back to large group. Using results of small group exercise, have them identify how Federal research could have helped solve these local problems.

ACTIVITY #10

TOPIC: Technology Transfer Potential at the Local Level

OBJECTIVE: To encourage participants to explore the technology transfer potential

METHODOLOGY: Question and answer and simple research assignment

MATERIALS: Pencil and paper.

Have participants answer the following questions:

1. What major technologies is the sponsoring laboratory interested in transferring?

2. What goals does the laboratory hope to accomplish through technology transfer?

3. Which local user groups are already targeted?

4. How is the local Technical Assistance/Volunteer Program structured?

Encourage participants to make an appointment with the Technology Transfer Coordinator at the laboratory ORTA office if they don't know the answers to these questions.

ACTIVITY #11

TOPIC: Community T^2 Users

OBJECTIVE: To acquaint participants with specific community organizations that are potential T^2 users

METHODOLOGY: Simple research assignment

MATERIALS: Local telephone books.

Using the local telephone book, look through the blue and yellow pages. Note the businesses, schools, hospitals, radio stations, and social service organizations that are potential technology users in your community.

ACTIVITY #12

TOPIC: Motivations for Becoming Technical Assistants/Volunteers

OBJECTIVES: To review the reasons why people choose to serve as technical assistants/volunteers

METHODOLOGY: Large group participation

MATERIALS: Newsprint and marker.

Have the group call out responses to the question, "What are some reasons people might give for becoming technical assistants?

ACTIVITY #13

TOPIC:	Barriers to Technology Transfer
OBJECTIVES:	To review the barriers to technology transfer and to encourage creative solutions to those barriers
METHODOLOGY:	Small-group brainstorming
MATERIALS:	Pencil and paper.

Divide large group into at least four smaller groups. Have half the groups brainstorm around "Barriers to Technology Transfer Inside the Laboratory" and the other half brainstorm around "Barriers to Technology Transfer in the Community." Each group should write down their ideas. Then have the two groups exchange papers.

For the next half hour, have all groups brainstorm on how to solve the problems on their new papers. One representative from each group should present the solutions to the room as a whole.

ACTIVITY #14

TOPIC: Laboratory Resources

OBJECTIVE: To acquaint retirees and associates of the laboratory with laboratory resources

METHODOLOGY: Tour of laboratory (for retirees/associates of laboratory only).

Provide tour highlighting change, etc.

ACTIVITY #15

TOPIC: Technical Assistance/Volunteer Program Administrative Concerns

OBJECTIVE: To introduce the laboratory T^2 Coordinator and to acquaint participants with program administrative concerns

METHODOLOGY: Briefing by T^2 Coordinator

MATERIALS: Lecture pad (optional).

Briefing Introduction: "What I Hope To Accomplish With Your Help."

Daily Details:

1. Outline of possible projects
2. Rules of behavior
3. Reimbursements
4. Clearances
5. Sample forms
6. Liability
7. Insurance requirements
8. Desk, office, phone
9. New regulations regarding information dissemination.

BIBLIOGRAPHY

Atkinson, J.E., and D.J. Mansfield, "Volunteerism and Technology Transfer, A Case Study, 1983, Technology Transfer Journal.

Creighton, J.W., J.A. Jolly, and S.A. Denning, "Enhancement of Research and Development Output Utilization Efficiencies; Linker Concept Methodology in the Technology Transfer Process," 30 June 1972, NPS-55CF 72061A, Naval Postgraduate School.

Creighton, J.W., J.A. Jolly, and S. Lauer, "Technology Transfer: A Think Tank Approach to Managing Innovation in the Public Sector." 1985, NCY (54CF), Naval Postgraduate School.

Creighton, J.W., J.A. Jolly, C.L. Bailey, and R.A. Blanchette, "Technology Transfer Concepts with Supporting Abstracts," 1984, NPS-54-84-017, Naval Postgraduate School.

Jolly, J.A., J.W. Creighton, and P.A. George, "Technology Transfer Process Model and Annotated Selected Bibliography," 1978, NPS-54CF780901, Naval Postgraduate School.

Creighton, J.W., and J.A. Jolly, "Technology Transfer: Research Utilization and User Stimulation," 1980, NPS-54-80-016, Naval Postgraduate School.

Jolly, J.A., and J.W. Creighton, "Technology Transfer in Research and Development," 1975, NPS-55JO75121, Naval Postgraduate School.

Jolly, J.A., J.W. Creighton, and B.M. Moore, "Technology Transfer in Science, Technology and Public Policy," 1977, NPS-54CF77121, Naval Postgraduate School.

Lambright, W. Henry, et al., "Technology Transfer to Cities: Process of Choice at the Local Level," 1979, Westview.

Manning, G.K. (ed.), "Technology Transfer: Successes and Failures," 1974, San Francisco Press, Inc., San Francisco, CA.

House, P.W., and D.W. Jones, "Getting It Off The Shelf: A Methodology for Implementing Federal Research," 1976, Westview Special Studies in Program Management, Westview Press, Boulder, CO.

Mansfield, D.J., "NUSC Technical Volunteer Service," 1982, USN Technical Report, NUSC #6719.

Mansfield, Donna J., et al., "Technical Volunteerism: New Help for Beleaguered Municipal Budgets," 1983, Small Towns Magazine.

Mansfield, D.J., and J.E. Atkinson, "Technical Volunteers," Association of Volunteer Administrators Journal, 1983.

November, R., "The Technical Assistance Program," 1985, NOSC Technical Document 832.

If the sponsoring laboratory does not have copies of bibliographic materials, they can be obtained by writing Technical Volunteer Resource Bank, Code 012.22, DTNSRDC, Bethesda, MD 20084-5000.

APPENDIX A

ENABLING T^2 LEGISLATION

DEPARTMENT OF DEFENSE

DOMESTIC TECHNOLOGY TRANSFER PROGRAM REGULATION

APRIL 1985

OFFICE OF THE UNDER SECRETARY OF DEFENSE
FOR RESEARCH AND ENGINEERING

FOREWORD

This Regulation is issued under the authority of DoD Directive 3200.12, "Defense Scientific and Technical Information Program," February 15, 1983. This Regulation applies to all DoD Components that perform or fund research and development efforts leading to the development of new technologies that may be appropriate for transfer to state and local governments and to the private sector.

This Regulation establishes the DoD Domestic Technology Transfer Program and responds to the requirements of Public Law 96-480, the Stevenson-Wydler Technology Innovation Act of 1980, to ensure the full use of the Nation's Federal investment in research and development, stimulating improved utilization by State and local governments and the private sector.

The Domestic Technology Transfer Program is separate and distinct from international technology transfer control programs, and nothing in this Regulation is intended to modify or rescind any of the responsibilities and procedures for technology transfer control set forth in other DoD Directives, Instructions and Publications.

This Regulation is effective immediately and is mandatory for use by all DoD Components. Head of DoD Components may issue supplementary instructions when necessary to provide for internal administration of this Regulation within their respective Components.

Send recommended changes to the Regulation through channels to:

Director, Office of Research and Laboratory Management
Office of the Deputy Under Secretary of Defense (Research and Advanced Technology)
Office of the Under Secretary of Defense for Research and Engineering
The Pentagon
Washington, DC 20301

DoD Components may obtain copies of this Regulation through their own publication channels. Other federal agencies and the public may obtain copies from Director, U.S. Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, Pennsylvania 19120.

James P. Wade, Jr.
Under Secretary of Defense
for Research and Engineering

TABLE OF CONTENTS

REFERENCES

(a) Public Law 94-480, "Stevenson-Wydler Technology Innovation Act of 1980," October 21, 1980

(b) DoD Directive 2040.2, "Control of International Technology, Goods, Services and Munitions Transfer," January 17, 1984

(c) DoD Directive 5230.24, "Distribution Statements on Technical Document," November 20, 1984

DEFINITIONS

Application Assessment. A summary emphasizing the potential application of each technological development from DoD Research and Development (R&D) projects that has potential usefulness to State and local governments or private industry.

Center for the Utilization of Federal Technology(CUFT). An element of the Department of Commerce established by PL 96-480 to:

a. Serve as a clearinghouse for collecting, disseminating, and transferring technical information having potential for use by the private sector and civilian agencies.

b. Coordinate the activities of the Offices of Research and Technology Applications (ORTAs) of the Federal laboratories.

c. Implement other assistance and coordination functions.

Federal Laboratory Consortium (FLC) for Technology Transfer. An organization of Federal Research and Development Laboratories and Centers formed to identify and mobilize the necessary resources to provide the environment, the organization, and the necessary technology transfer mechanisms required to facilitate the fullest possible utilization of Federally sponsored research and development results by both public and private sector potential users.

Office of Research and Technology Applications (ORTA). A function established in each DoD R&D activity to coordinate the Domestic Technology Transfer Program and to perform the actions specified in PL 96-480 (reference (a)) and other actions as outlined in this Regulation.

CHAPTER 1

THE DOMESTIC TECHNOLOGY TRANSFER PROGRAM

A. Policy

In order to achieve the maximum national benefit from DoD scientific and technical efforts, it shall be DoD policy to:

1. Encourage the dissemination of scientific and technical information, data, and knowhow developed by or for the Department of Defense to state and local governments and to the private sector, consistent with the requirements of U.S. national security.

2. Promote the sharing of technology that fosters the advance of science or that has commercial potential and thus should be employed to best advantage for the security and socio-economic well-being of the United States.

3. Support coordination between the industrial, academic, and government research and development activities of the U.S. by cooperating in the sharing of plans for future research efforts and the sharing of facilities as appropriate.

4. Support cooperative efforts to stimulate industrial innovation, especially in small businesses.

5. Support and encourage the exchange of scientific and technical personnel among academia, industry, and the DoD laboratories.

6. Support the domestic technology transfer process as an integral part of the research and development effort and incorporate domestic technology transfer objectives into the mission of each appropriate R&D activity.

7. Ensure that domestic technology transfer functions do not compete substantially with similar services available in the private sector.

8. Ensure that the Domestic Technology Transfer Program does not conflict with Export Control Regulation, policies governing militarily critical technology, or any of the responsibilities and procedures for technology transfer control set forth in DoD Directives, Instructions and Publications. Control policies are addressed in reference (b) and (c).

B. Responsibilities

1. The Under Secretary of Defense for Research and Engineering (USDR&E) shall:

a. Establish, policies and procedures for domestic technology transfer.

b. Monitor compliance with this Regulation.

c. Coordinate interservice activity under the Domestic Technology Transfer Program.

d. Cooperate with other Federal agencies, particularly the Department of Commerce and the National Science Foundation, to maximize the effectiveness of federal domestic technology transfer efforts.

2. Heads of DoD Components shall:

a. Establish an Office of Research and Technology Application (ORTA) at appropriate laboratories and other activities to perform, as a minimum, the domestic technology transfer function specified in this regulation. Each ORTA shall:

(1) Perform the following functions as specified in PL 96-480 (reference (a)).

(a) Prepare an application assessment of each research and development project which has potential for successful application in State or local government or in private industry.

(b) Provide and disseminate information on federally owned or originated products, processes, and services having potential application to State and local governments and to private industry.

(c) Cooperate with and assist the Center for the Utilization of Federal Technology and other organizations that link the research and development resources of that R&D activity and the Federal Government as a whole to potential users in state and local government and private industry.

(d) Provide technical assistance in response to requests from State and local government officials.

(2) Serve as primary representative for their activity and provide appropriate support to the Federal Laboratory Consortium for Technology Transfer.

(3) Initiate contacts and maintain liaison with State and local government, and the private sector. Participate in appropriate activities of the public and private sector that provide the opportunities to achieve technology transfer objectives; e.g., local government meetings or small business conferences.

(4) Assist program managers and technical department heads in identifying technologies suitable for transfer and for which application assessments need to be developed.

(5) Coordinate domestic technology transfer activities with patent counsel to determine rights to tactical data, patent and licensing implications, and the commercial potential of patentable technology.

(6) Ensure that no domestic technology transfer functions substantially compete with similar services available in the private sector.

(7) Ensure that no domestic technology transfer functions conflict with Export Control Regulations, policies governing militarily critical technology, or any of the responsibilities and procedures for technology transfer control set forth in DoD Directives, Instructions and Manuals.

b. Specify the appropriate R&D activities that may require a full-time individual to be responsible for performing the ORTA functions.

c. Support the policies set forth in this regulation.

d. Designate a headquarters point of contact for domestic technology transfer activities.

e. Develop appropriate goals or corporate plans to accomplish the objectives of the Domestic Technology Transfer Program.

f. Encourage and cooperate with the establishment of technical volunteer programs as a resource to complement and support domestic technology transfer activities.

g. Establish a system for collecting and forwarding Technology Application Assessments to the Center for the Utilization of Federal Technology of the Department of Commerce.

h. Establish a mechanism for coordinating domestic technology transfer efforts with the Small and Disadvantaged Business Utilization Specialists for the purpose of stimulating commercialization of appropriate technologies by small business.

i. Establish a mechanism to provide appropriate security review of domestic technology transfer efforts.

CHAPTER 2

REPORTING

As specified in PL 96-480 (reference (a)), a biennial report summarizing the domestic technology transfer activities performed by the DOD and its laboratories is due to the Department of Commerce, Center for the Utilization of Federal Technology by 1 November in even-numbered years. Specific guidance will be provided by USDR&E for each biennial report no later than 60 days prior to the due date.

Public Law 96-480
96th Congress

An Act

To promote United States technological innovation for the achievement of national economic, environmental, and social goals, and for other purposes.

Oct. 21, 1980
[S. 1250]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Stevenson-Wydler Technology Innovation Act of 1980".

Stevenson-Wydler Technology Innovation Act of 1980.
15 USC 3701 note.

SEC. 2. FINDINGS.

15 USC 3701.

The Congress finds and declares that:

(1) Technology and industrial innovation are central to the economic, environmental, and social well-being of citizens of the United States.

(2) Technology and industrial innovation offer an improved standard of living, increased public and private sector productivity, creation of new industries and employment opportunities, improved public services and enhanced competitiveness of United States products in world markets.

(3) Many new discoveries and advances in science occur in universities and Federal laboratories, while the application of this new knowledge to commercial and useful public purposes depends largely upon actions by business and labor. Cooperation among academia, Federal laboratories, labor, and industry, in such forms as technology transfer, personnel exchange, joint research projects, and others, should be renewed, expanded, and strengthened.

(4) Small businesses have performed an important role in advancing industrial and technological innovation.

(5) Industrial and technological innovation in the United States may be lagging when compared to historical patterns and other industrialized nations.

(6) Increased industrial and technological innovation would reduce trade deficits, stabilize the dollar, increase productivity gains, increase employment, and stabilize prices.

(7) Government antitrust, economic, trade, patent, procurement, regulatory, research and development, and tax policies have significant impacts upon industrial innovation and development of technology, but there is insufficient knowledge of their effects in particular sectors of the economy.

(8) No comprehensive national policy exists to enhance technological innovation for commercial and public purposes. There is a need for such a policy, including a strong national policy supporting domestic technology transfer and utilization of the science and technology resources of the Federal Government.

(9) It is in the national interest to promote the adaptation of technological innovations to State and local government uses. Technological innovations can improve services, reduce their costs, and increase productivity in State and local governments.

(10) The Federal laboratories and other performers of federally funded research and development frequently provide scientific

79-139 O - 80 (313)

and technological developments of potential use to State and local governments and private industry. These developments should be made accessible to those governments and industry. There is a need to provide means of access and to give adequate personnel and funding support to these means.

(11) The Nation should give fuller recognition to individuals and companies which have made outstanding contributions to the promotion of technology or technological manpower for the improvement of the economic, environmental, or social well-being of the United States.

15 USC 3702.

SEC. 3. PURPOSE.

It is the purpose of this Act to improve the economic, environmental, and social well-being of the United States by—

(1) establishing organizations in the executive branch to study and stimulate technology;

(2) promoting technology development through the establishment of centers for industrial technology;

(3) stimulating improved utilization of federally funded technology developments by State and local governments and the private sector;

(4) providing encouragement for the development of technology through the recognition of individuals and companies which have made outstanding contributions in technology; and

(5) encouraging the exchange of scientific and technical personnel among academia, industry, and Federal laboratories.

15 USC 3703.

SEC. 4. DEFINITIONS.

As used in this Act, unless the context otherwise requires, the term—

(1) "Office" means the Office of Industrial Technology established under section 5 of this Act.

(2) "Secretary" means the Secretary of Commerce.

(3) "Director" means the Director of the Office of Industrial Technology, appointed pursuant to section 5 of this Act.

(4) "Centers" means the Centers for Industrial Technology established under section 6 or section 8 of this Act.

(5) "Nonprofit institution" means an organization owned and operated exclusively for scientific or educational purposes, no part of the net earnings of which inures to the benefit of any private shareholder or individual.

(6) "Board" means the National Industrial Technology Board established pursuant to section 10.

(7) "Federal laboratory" means any laboratory, any federally funded research and development center, or any center established under section 6 or section 8 of this Act that is owned and funded by the Federal Government, whether operated by the Government or by a contractor.

(8) "Supporting agency" means either the Department of Commerce or the National Science Foundation, as appropriate.

Office of Industrial Technology, establishment. 15 USC 3704.

SEC. 5. COMMERCE AND TECHNOLOGICAL INNOVATION.

(a) IN GENERAL.—The Secretary shall establish and maintain an Office of Industrial Technology in accordance with the provisions, findings, and purposes of this Act.

(b) DIRECTOR.—The President shall appoint, by and with the advice and consent of the Senate, a Director of the Office, who shall be

compensated at the rate provided for level V of the Executive Schedule in section 5316 of title 5, United States Code.

(c) DUTIES.—The Secretary, through the Director, on a continuing basis, shall—

(1) determine the relationships of technological developments and international technology transfers to the output, employment, productivity, and world trade performance of United States and foreign industrial sectors;

(2) determine the influence of economic, labor and other conditions, industrial structure and management, and government policies on technological developments in particular industrial sectors worldwide;

(3) identify technological needs, problems, and opportunities within and across industrial sectors that, if addressed, could make a significant contribution to the economy of the United States;

(4) assess whether the capital, technical and other resources being allocated to domestic industrial sectors which are likely to generate new technologies are adequate to meet private and social demands for goods and services and to promote productivity and economic growth;

(5) propose and support studies and policy experiments, in cooperation with other Federal agencies, to determine the effectiveness of measures with the potential of advancing United States technological innovation;

(6) provide that cooperative efforts to stimulate industrial innovation be undertaken between the Director and other officials in the Department of Commerce responsible for such areas as trade and economic assistance;

(7) consider government measures with the potential of advancing United States technological innovation and exploiting innovations of foreign origin; and

(8) publish the results of studies and policy experiments.

(d) REPORT.—The Secretary shall prepare and submit to the President and Congress, within 3 years after the date of enactment of this Act, a report on the progress, findings, and conclusions of activities conducted pursuant to sections 5, 6, 8, 11, 12, and 13 of this Act and recommendations for possible modifications thereof. Report to President and Congress.

SEC. 6. CENTERS FOR INDUSTRIAL TECHNOLOGY. 15 USC 3705.

(a) ESTABLISHMENT.—The Secretary shall provide assistance for the establishment of Centers for Industrial Technology. Such Centers shall be affiliated with any university, or other nonprofit institution, or group thereof, that applies for and is awarded a grant or enters into a cooperative agreement under this section. The objective of the Centers is to enhance technological innovation through—

(1) the participation of individuals from industry and universities in cooperative technological innovation activities;

(2) the development of the generic research base, important for technological advance and innovative activity, in which individual firms have little incentive to invest, but which may have significant economic or strategic importance, such as manufacturing technology;

(3) the education and training of individuals in the technological innovation process;

(4) the improvement of mechanisms for the dissemination of scientific, engineering, and technical information among universities and industry;

(5) the utilization of the capability and expertise, where appropriate, that exists in Federal laboratories; and

(6) the development of continuing financial support from other mission agencies, from State and local government, and from industry and universities through, among other means, fees, licenses, and royalties.

(b) ACTIVITIES.—The activities of the Centers shall include, but need not be limited to—

(1) research supportive of technological and industrial innovation including cooperative industry-university basic and applied research;

(2) assistance to individuals and small businesses in the generation, evaluation and development of technological ideas supportive of industrial innovation and new business ventures;

(3) technical assistance and advisory services to industry, particularly small businesses; and

(4) curriculum development, training, and instruction in invention, entrepreneurship, and industrial innovation.

Each Center need not undertake all of the activities under this subsection.

(c) REQUIREMENTS.—Prior to establishing a Center, the Secretary shall find that—

(1) consideration has been given to the potential contribution of the activities proposed under the Center to productivity, employment, and economic competitiveness of the United States;

(2) a high likelihood exists of continuing participation, advice, financial support, and other contributions from the private sector;

(3) the host university or other nonprofit institution has a plan for the management and evaluation of the activities proposed within the particular Center, including:

(A) the agreement between the parties as to the allocation of patent rights on a nonexclusive, partially exclusive, or exclusive license basis to and inventions conceived or made under the auspices of the Center; and

(B) the consideration of means to place the Center, to the maximum extent feasible, on a self-sustaining basis;

(4) suitable consideration has been given to the university's or other nonprofit institution's capabilities and geographical location; and

(5) consideration has been given to any effects upon competition of the activities proposed under the Center.

(d) PLANNING GRANTS.—The Secretary is authorized to make available nonrenewable planning grants to universities or nonprofit institutions for the purpose of developing a plan required under subsection (c)(3).

Inventions, title acquisition

(e) RESEARCH AND DEVELOPMENT UTILIZATION.—(1) To promote technological innovation and commercialization of research and development efforts, each Center has the option of acquiring title to any invention conceived or made under the auspices of the Center that was supported at least in part by Federal funds: *Provided*, That—

(A) the Center reports the invention to the supporting agency together with a list of each country in which the Center elects to file a patent application on the invention;

(B) said option shall be exercised at the time of disclosure of invention or within such time thereafter as may be provided in the grant or cooperative agreement;

(C) the Center intends to promote the commercialization of the invention and file a United States patent application;

(D) royalties be used for compensation of the inventor or for educational or research activities of the Center;

(E) the Center make periodic reports to the supporting agency, and the supporting agency may treat information contained in such reports as privileged and confidential technical, commercial, and financial information and not subject to disclosures under the Freedom of Information Act; and

(F) any Federal department or agency shall have the royalty-free right to practice, or have practiced on its behalf, the invention for governmental purposes.

The supporting agency shall have the right to acquire title to any patent on an invention in any country in which the Center elects not to file a patent application or fails to file within a reasonable time.

Supporting agency licensing rights.

(2) Where a Center has retained title to an invention under paragraph (1) of this subsection the supporting agency shall have the right to require the Center or its licensee to grant a nonexclusive, partially exclusive, or exclusive license to a responsible applicant or applicants, upon terms that are reasonable under the circumstances, if the supporting agency determines, after public notice and opportunity for hearing, that such action is necessary—

(A) because the Center or licensee has not taken and is not expected to take timely and effective action to achieve practical application of the invention;

(B) to meet health, safety, environmental, or national security needs which are not reasonably satisfied by the contractor or licensee; or

(C) because the granting of exclusive rights in the invention has tended substantially to lessen competition or to result in undue market concentration in the United States in any line of commerce to which the technology relates.

U.S. Courts of Claims, petition.

(3) Any individual, partnership, corporation, association, institution, or other entity adversely affected by a supporting agency determination made under paragraph (2) of this subsection may, at any time within 60 days after the determination is issued, file a petition to the United States Court of Claims which shall have jurisdiction to determine that matter de novo and to affirm, reverse, or modify as appropriate, the determination of the supporting agency.

Antitrust laws.

(f) ADDITIONAL CONSIDERATION.—The supporting agency may request the Attorney General's opinion whether the proposed joint research activities of a Center would violate any of the antitrust laws. The Attorney General shall advise the supporting agency of his determination and the reasons for it within 120 days after receipt of such request.

SEC. 7. GRANTS AND COOPERATIVE AGREEMENTS. 15 USC 3706.

(a) IN GENERAL.—The Secretary may make grants and enter into cooperative agreements according to the provisions of this section in order to assist any activity consistent with this Act, including activities performed by individuals. The total amount of any such grant or cooperative agreement may not exceed 75 percent of the total cost of the program.

(b) ELIGIBILITY AND PROCEDURE.—Any person or institution may apply to the Secretary for a grant or cooperative agreement available under this section. Application shall be made in such form and manner, and with such content and other submissions, as the Direc-

tor shall prescribe. The Secretary shall act upon each such application within 90 days after the date on which all required information is received.

(c) TERMS AND CONDITIONS.—

(1) Any grant made, or cooperative agreement entered into, under this section shall be subject to the limitations and provisions set forth in paragraph (2) of this subsection, and to such other terms, conditions, and requirements as the Secretary deems necessary or appropriate.

(2) Any person who receives or utilizes any proceeds of any grant made or cooperative agreement entered into under this section shall keep such records as the Secretary shall by regulation prescribe as being necessary and appropriate to facilitate effective audit and evaluation, including records which fully disclose the amount and disposition by such recipient of such proceeds, the total cost of the program or project in connection with which such proceeds were used, and the amount, if any, of such costs which was provided through other sources.

15 USC 3707.

SEC. 8. NATIONAL SCIENCE FOUNDATION CENTERS FOR INDUSTRIAL TECHNOLOGY.

(a) ESTABLISHMENT AND PROVISIONS.—The National Science Foundation shall provide assistance for the establishment of Centers for Industrial Technology. Such Centers shall be affiliated with a university, or other nonprofit institution, or a group thereof. The objective of the Centers is to enhance technological innovation as provided in section 6(a) through the conduct of activities as provided in section 6(b). The provisions of sections 6(e) and 6(f) shall apply to Centers established under this section.

(b) PLANNING GRANTS.—The National Science Foundation is authorized to make available nonrenewable planning grants to universities or nonprofit institutions for the purpose of developing the plan, as described under section 6(c)(3).

(c) TERMS AND CONDITIONS.—Grants, contracts, and cooperative agreements entered into by the National Science Foundation in execution of the powers and duties of the National Science Foundation under this Act shall be governed by the National Science Foundation Act of 1950 and other pertinent Acts.

42 USC 1861 note.

15 USC 3708

SEC. 9. ADMINISTRATIVE ARRANGEMENTS.

(a) COORDINATION.—The Secretary and the National Science Foundation shall, on a continuing basis, obtain the advice and cooperation of departments and agencies whose missions contribute to or are affected by the programs established under this Act, including the development of an agenda for research and policy experimentation. These departments and agencies shall include but not be limited to the Departments of Defense, Energy, Education, Health and Human Services, Housing and Urban Development, the Environmental Protection Agency, National Aeronautics and Space Administration, Small Business Administration, Council of Economic Advisers, Council on Environmental Quality, and Office of Science and Technology Policy.

(b) COOPERATION.—It is the sense of the Congress that departments and agencies, including the Federal laboratories, whose missions are affected by, or could contribute to, the programs established under this Act, should, within the limits of budgetary authorizations and appropriations, support or participate in activities or projects authorized by this Act.

(c) ADMINISTRATIVE AUTHORIZATION.—

(1) Departments and agencies described in subsection (b) are authorized to participate in, contribute to, and serve as resources for the Centers and for any other activities authorized under this Act.

(2) The Secretary and the National Science Foundation are authorized to receive moneys and to receive other forms of assistance from other departments or agencies to support activities of the Centers and any other activities authorized under this Act.

(d) COOPERATIVE EFFORTS.—The Secretary and the National Science Foundation shall, on a continuing basis, provide each other the opportunity to comment on any proposed program of activity under section 6, 8, or 13 of this Act before funds are committed to such program in order to mount complementary efforts and avoid duplication.

SEC. 10. NATIONAL INDUSTRIAL TECHNOLOGY BOARD. 15 USC 3709.

(a) ESTABLISHMENT.—There shall be established a committee to be known as the National Industrial Technology Board.

(b) DUTIES.—The Board shall take such steps as may be necessary to review annually the activities of the Office and advise the Secretary and the Director with respect to—

(1) the formulation and conduct of activities under section 5 of this title;

(2) the designation and operation of Centers and their programs under section 6 of this Act including assistance in establishing priorities;

(3) the preparation of the report required under section 5(d); and

(4) such other matters as the Secretary or Director refers to the Board, including the establishment of Centers under section 8 of this Act, for review and advice.

The Director shall make available to the Board such information, personnel, and administrative services and assistance as it may reasonably require to carry out its duties. The National Science Foundation shall make available to the Board such information and assistance as it may reasonably require to carry out its duties.

(c) MEMBERSHIP, TERMS, AND POWERS.—

(1) The Board shall consist of 15 voting members who shall be appointed by the Secretary. The Director shall serve as a nonvoting member of the Board. The members of the Board shall be individuals who, by reason of knowledge, experience, or training are especially qualified in one or more of the disciplines and fields dealing with technology, labor, and industrial innovation or who are affected by technological innovation. The majority of the members of the Board shall be individuals from industry and business.

(2) The term of office of a voting member of the Board shall be 3 years, except that of the original appointees, five shall be appointed for a term of 1 year, five shall be appointed for a term of 2 years, and five shall be appointed for a term of 3 years.

(3) Any individual appointed to fill a vacancy occurring before the expiration of the term for which his or her predecessor was appointed shall be appointed only for the remainder of such term. No individual may be appointed as a voting member after serving more than two full terms as such a member.

(4) The Board shall select a voting member to serve as the Chairperson and another voting member to serve as the Vice Chairperson. The Vice Chairperson shall perform the functions of the Chairperson in the absence or incapacity of the Chairperson.

45 FR 69201.

(5) Voting members of the Board may receive compensation at a daily rate for GS-18 of the General Schedule under section 5332 of title 5, United States Code, when actually engaged in the performance of duties for such Board, and may be reimbursed for actual and reasonable expenses incurred in the performance of such duties.

15 USC 3710.

SEC. 11. UTILIZATION OF FEDERAL TECHNOLOGY.

Technology transfer.

(a) POLICY.—It is the continuing responsibility of the Federal Government to ensure the full use of the results of the Nation's Federal investment in research and development. To this end the Federal Government shall strive where appropriate to transfer federally owned or originated technology to State and local governments and to the private sector.

(b) ESTABLISHMENT OF RESEARCH AND TECHNOLOGY APPLICATIONS OFFICES.—Each Federal laboratory shall establish an Office of Research and Technology Applications. Laboratories having existing organizational structures which perform the functions of this section may elect to combine the Office of Research and Technology Applications within the existing organization. The staffing and funding levels for these offices shall be determined between each Federal laboratory and the Federal agency operating or directing the laboratory, except that (1) each laboratory having a total annual budget exceeding $20,000,000 shall provide at least one professional individual full-time as staff for its Office of Research and Technology Applications, and (2) after September 30, 1981, each Federal agency which operates or directs one or more Federal laboratories shall make available not less than 0.5 percent of the agency's research and development budget to support the technology transfer function at the agency and at its laboratories, including support of the Offices of Research and Technology Applications. The agency head may waive the requirements set forth in (1) and/or (2) of this subsection. If the agency head waives either requirement (1) or (2), the agency head shall submit to Congress at the time the President submits the budget to Congress an explanation of the reasons for the waiver and alternate plans for conducting the technology transfer function at the agency.

Waiver. Submittal to Congress.

(c) FUNCTIONS OF RESEARCH AND TECHNOLOGY APPLICATIONS OFFICES.—It shall be the function of each Office of Research and Technology Applications—

(1) to prepare an application assessment of each research and development project in which that laboratory is engaged which has potential for successful application in State or local government or in private industry;

(2) to provide and disseminate information on federally owned or originated products, processes, and services having potential application to State and local governments and to private industry;

(3) to cooperate with and assist the Center for the Utilization of Federal Technology and other organizations which link the research and development resources of that laboratory and the Federal Government as a whole to potential users in State and local government and private industry; and

(4) to provide technical assistance in response to requests from State and local government officials.

Agencies which have established organizational structures outside their Federal laboratories which have as their principal purpose the transfer of federally owned or originated technology to State and local government and to the private sector may elect to perform the functions of this subsection in such organizational structures. No Office of Research and Technology Applications or other organizational structures performing the functions of this subsection shall substantially compete with similar services available in the private sector.

(d) CENTER FOR THE UTILIZATION OF FEDERAL TECHNOLOGY.—There is hereby established in the Department of Commerce a Center for the Utilization of Federal Technology. The Center for the Utilization of Federal Technology shall— Establishment

(1) serve as a central clearinghouse for the collection, dissemination and transfer of information on federally owned or originated technologies having potential application to State and local governments and to private industry;

(2) coordinate the activities of the Offices of Research and Technology Applications of the Federal laboratories;

(3) utilize the expertise and services of the National Science Foundation and the existing Federal Laboratory Consortium for Technology Transfer, particularly in dealing with State and local governments;

(4) receive requests for technical assistance from State and local governments and refer these requests to the appropriate Federal laboratories;

(5) provide funding, at the discretion of the Secretary, for Federal laboratories to provide the assistance specified in subsection (c)(4); and

(6) use appropriate technology transfer mechanisms such as personnel exchanges and computer-based systems.

(e) AGENCY REPORTING.—Each Federal agency which operates or directs one or more Federal laboratories shall prepare biennially a report summarizing the activities performed by that agency and its Federal laboratories pursuant to the provisions of this section. The report shall be transmitted to the Center for the Utilization of Federal Technology by November 1 of each year in which it is due.

SEC. 12. NATIONAL TECHNOLOGY MEDAL. 15 USC 3711

(a) ESTABLISHMENT.—There is hereby established a National Technology Medal, which shall be of such design and materials and bear such inscriptions as the President, on the basis of recommendations submitted by the Office of Science and Technology Policy, may prescribe.

(b) AWARD.—The President shall periodically award the medal, on the basis of recommendations received from the Secretary or on the basis of such other information and evidence as he deems appropriate, to individuals or companies, which in his judgment are deserving of special recognition by reason of their outstanding contributions to the promotion of technology or technological manpower for the improvement of the economic, environmental, or social well-being of the United States.

(c) PRESENTATION.—The presentation of the award shall be made by the President with such ceremonies as he may deem proper.

15 USC 3712.

SEC. 13. PERSONNEL EXCHANGES.

The Secretary and the National Science Foundation, jointly, shall establish a program to foster the exchange of scientific and technical personnel among academia, industry, and Federal laboratories. Such program shall include both (1) federally supported exchanges and (2) efforts to stimulate exchanges without Federal funding.

15 USC 3713.

SEC. 14. AUTHORIZATION OF APPROPRIATIONS.

(a) There is authorized to be appropriated to the Secretary for purposes of carrying out section 6, not to exceed $19,000,000 for the fiscal year ending September 30, 1981, $40,000,000 for the fiscal year ending September 30, 1982, $50,000,000 for the fiscal year ending September 30, 1983, and $60,000,000 for each of the fiscal years ending September 30, 1984, and 1985.

(b) In addition to authorizations of appropriations under subsection (a), there is authorized to be appropriated to the Secretary for purposes of carrying out the provisions of this Act, not to exceed $5,000,000 for the fiscal year ending September 30, 1981, $9,000,000 for the fiscal year ending September 30, 1982, and $14,000,000 for each of the fiscal years ending September 30, 1983, 1984, and 1985.

(c) Such sums as may be appropriated under subsections (a) and (b) shall remain available until expended.

(d) To enable the National Science Foundation to carry out its powers and duties under this Act only such sums may be appropriated as the Congress may authorize by law.

15 USC 3714.

SEC. 15. SPENDING AUTHORITY.

No payments shall be made or contracts shall be entered into pursuant to this Act except to such extent or in such amounts as are provided in advance in appropriation Acts.

Approved October 21, 1980.

LEGISLATIVE HISTORY

HOUSE REPORT No. 96-1199 (Comm. on Science and Technology).
SENATE REPORT No. 96-751 (Comm. on Commerce, Science, and Transportation).
CONGRESSIONAL RECORD, Vol. 126 (1980):
May 28, considered and passed Senate.
Sept. 8, considered and passed House, amended.
Sept. 26, Senate concurred in certain House amendments, disagreed to others, and concurred in remainder with amendments.
Oct. 1, House receded from its amendments and concurred in Senate amendments.
WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS, Vol. 16, No. 43:
Oct. 21, Presidential statement.

U.S.C-
X 2

The Stevenson-Wydler Technology Innovation Act of 1980

Report to the President
and the Congress
from the Secretary of Commerce
February 1984

DEPARTMENT OF COMMERCE REPORT ON THE ACTIVITIES CONDUCTED PURSUANT TO SECTIONS 5, 6, 8, 11, 12 AND 13 OF THE STEVENSON-WYDLER TECHNOLOGY INNOVATION ACT OF 1980 (PUBLIC LAW 96-480)

Table of Contents

Table of Contents

DEPARTMENT OF COMMERCE
REPORT ON THE ACTIVITIES CONDUCTED PURSUANT TO SECTIONS 5, 6, 8, 11, 12 AND 13 OF THE STEVENSON-WYDLER TECHNOLOGY INNOVATION ACT OF 1980 (PUBLIC LAW 96-480)

Chapter 1: Introduction

The Report

Section 5(d) of the Stevenson-Wydler Act requires that the Secretary of Commerce prepare and submit to the President and Congress, within three years after the date of enactment of this Act, a report on the progress, findings, and conclusions of activities conducted pursuant to sections 5, 6, 8, 11, 12, and 13 of this Act and recommendations for possible modifications thereof.

This is in response to the requirements of Section 5(d).

The Purpose of the Act and the Means for Meeting That Purpose.

The purpose of the Stevenson-Wydler Act as set forth in Section 3 is "to improve the economic, environmental, and social well-being of the United States". Section 3 provides that this purpose is to be achieved by the following means:

(1) establishing organizations in the executive branch to study and stimulate technology;

(2) promoting technology development through the establishment of centers for industrial technology;

(3) stimulating improved utilization of Federally funded technology developments by state and local governments and the private sector;

(4) providing encouragement for the development of technology through the recognition of individuals and companies which have made outstanding contributions in technology; and

(5) encouraging the exchange of scientific and technical personnel among academia, industry, and Federal laboratories.

The Act's purpose and the means to achieve it are driven by the Act's finding that increased industrial innovation will follow from cooperation among academia, Federal laboratories, labor, and industry, in such forms as technology transfer, personnel exchange and joint research projects. While the Act finds that industrial innovation is affected significantly by Government antitrust, economic, trade, patent, procurement, regulatory, R&D and tax policies, these policies are not addressed in achieving the purpose of the Act. It is clear, however, that the Act intended these policies to be examined and modified, if appropriate, under the Act's broad mandate "to study and stimulate technology".

Programs Established by the Act tc Meet Its Purpose.

The operative sections of the Act authorize activities to support each of the means as follows:

> Section 5 of the Act is intended to implement (1) above by establishing an Office of Industrial Technology to undertake a number of duties including studies and policy experiments. The studies and policy experiments are to be aimed generally at heightening the world position of the United States in generating new technology. The Act authorizes up to $5 million to undertake these studies and policy experiments in fiscal year 1981. Authorizations increase to $9 million in fiscal year 1982 and $14 million for fiscal years 1983, 1984 and 1985;
>
> Sections 6 and 8 of the Act are intended to implement (2) above through Department of Commerce and National Science Foundation funding of centers for industrial technology. These centers would be affiliated with university or other nonprofit institutions for the primary purpose of fostering technology development through cooperative R&D efforts with industry. It is also intended that the centers undertake generic research projects. The Act authorizes up to $19 million for the funding of centers in fiscal year 1981. Authorizations increase to $40 million in fiscal year 1982, $50 million in fiscal year 1983 and $60 million for fiscal years 1984 and 1985;

Section 11 of the Act is intended to implement (3) above by establishing dedicated offices in the Federal laboratories and a central focus in the Department of Commerce for the purpose of intensifying the transfer of Federally owned or originated technology.

Section 12 of the Act is intended to implement (4) above by establishing a National Technology Medal; and

Section 13 of the Act is intended to implement (5) above through a joint personnel exchange program established by the Department of Commerce and the National Science Foundation.

Chapter II: Summary and Recommendations

Summary

The Department of Commerce and the Administration have made substantial progress in carrying out the intent of Stevenson-Wydler Act to increase cooperative R&D, technology transfer and industrial innovation. The law was designed to stimulate productivity, technology and innovation in the private sector with the intent of regaining or maintaining U. S. technical and industrial leadership in global markets. The comprehensive Administration strategy to do this focuses on the multi-faceted process of innovation itself rather than selected end-products of the process. Weak points in the innovation process have been identified, options for remedial action have been analyzed, and a series of initiatives have been undertaken as described below. These initiatives can be categorized as removing barriers to innovation, providing incentives for private sector initiatives, and increasing awareness of these initiatives in noninterventionist ways. For the most part, this has involved specific use or modification of Government antitrust, patent, procurement, regulatory, R&D, and tax policies.

Examples of initiatives that have been taken include the following:

- An R&D Limited Partnership (RDLP) concept has been articulated as a new method of financing innovation that is equally available and useful both to declining and growth industries. It minimizes direct Government intervention in the private sector. This approach is designed to achieve the objectives of Stevenson-Wydler, but to a much greater degree and over a much broader spectrum of industries than originally envisioned.

- The transfer of Federally funded technology in the private sector is being pursued through patent policy changes that "automatically" transfer new technology to the organizations that develop it and that have the incentive to commercialize it, rather than continuing the current process of "warehousing" and licensing it at a later time.

- o Private sector cooperative R&D is being promoted through the removal or reduction of antitrust and other barriers to procompetitive arrangements.

- o Federal research funding is being reallocated toward basic research, where commercial incentives are weak or do not exist, and away from development and demonstration of commercial technologies, which are more appropriately undertaken with private funding.

- o Basic research performers are being encouraged to be involved in shepherding their new ideas farther along the innovation process toward commercialization.

- o The role of the Federal laboratories is being broadened to include more cooperation with universities, other nonprofit organizations and industry.

- o Protection of intellectual property held by developers of new technologies is being increased and ambiguities in current laws are being clarified.

As a result of the many policy changes introduced by the Administration along with an improving economic climate, we have already seen:

- o An increase in private R&D spending, which has recently surpassed Federal R&D spending. (Industry is forecasted to increase its R&D spending for 1983 by 9.7 percent for a total of $41.7 billion. If the forecast holds true, industry will contribute 49.8 percent of total R&D funding. The Federal Government will contribute 46.4 percent, with academia and others making up the balance.)

- o A sharp increase in university/industry/state and local government R&D cooperation. (Corporate contributions are estimated to have increased to about 6-7 percent of total academic R&D, or about $400-500 million annually.)

- o Major new private sector cooperative R&D ventures. (The Semiconductor Research Corporation, the Microelectronics and Computer Technology Corporation, the American Welding Technology Applications Center and Control Data's CDC Research Limited Partnership are four examples. Many others are in process of formation.)

Within this improved environment the Administration's Stevenson-Wydler initiatives have led to results such as the following:

- o A sharp increase in patenting and licensing of technology by universities and the Federal agencies. (University sources indicate that approximately 33 percent of the growing university patent portfolio is being licensed. Further, the Department's Center for the Utilization of Federal Technology has quadrupled its rate of licensing of Federally owned inventions assigned to the Department since fiscal year 1980.)

- o An upsurge in private sector activity in R&D limited partnerships.

- o Issuance of a Presidential Memorandum on patent policy extending contractor ownership of Federally funded inventions under P. L. 96-517 to performers not covered by that Act as permitted by law.

- o The creation of new roles and organizational structures to intensify the development and utilization of university, nonprofit and Federal laboratory research results.

It is the Department's view that the primary importance of the Stevenson-Wydler Act is in its early anticipation and articulation of the need for increased cooperative R&D and technology transfer as a means of strengthening industrial innovation. The Department has taken action to increase cooperative R&D and technology transfer, but in ways consistent with the policies of this Administration and existing economic circumstances. The Department and the Administration have focused on Government antitrust, patent, procurement, regulatory, research and development and tax policies as the primary means of increasing industrial innovation. By doing so, the Department has implemented the spirit and intent of Stevenson-Wydler and accelerated the rate of achievement of its intended result.

The Department has not implemented the Centers for Industrial Technology authorized by Section 6 or the personnel exchange program envisioned by Section 13. Given the economic environment at the time that these programs were to be initiated, the Department chose to use alternative means of achieving the goals of these sections without the expenditure of the funds authorized. This is discussed in greater detail in the parts of the report covering Section 6 and 13.

Recommendations

The Department now has no specific recommendations for modification of sections 5, 6, 8, 11, 12 and 13 of Stevenson-Wydler, as invited by the Act. The Department's view is that the following actions will increase industrial innovation as the Act intended:

- Passage of the Administration's proposed antitrust legislation removing barriers to cooperative R&D ventures and the procompetitive exercise of intellectual property rights.
- Passage of legislation increasing intellectual property protection for software and microchips.
- Passage of legislation to extend contractor ownership of federally funded inventions, as specified under P.L. 96-517, to Federally funded research and development performers not now covered by that Act.

In addition, the Department is considering the following actions (and the methods for achieving them) as means of heightening cooperative R&D, technology transfer and industrial innovation:

- To the extent not impowered, extending the authority of the Federal agencies' Offices of Research and Technology Applications (ORTAs) to:
  - Enter into cooperative research projects with industry, universities and other nonprofit organizations, including the use of limited partnerships.
  - Administer an incentive program for laboratory inventors, including royalty sharing.
  - Grant patent licenses or assign future invention ownership rights to industry, university or other nonprofit organizations in order to encourage cooperation in Federal laboratory research efforts.
- Developing techniques for use by the ORTAs to aid in determining the commercial potential of new technologies generated in performance of Federal laboratory research.

- o Establishing a new category of Federal professional employees to undertake the extended authorities of ORTAs recommended above.

- o Developing a training course to increase the invention awareness of research performers and to communicate the essentials of commercialization options which are available to the ORTAs in the Federal agencies and the technology management offices of universities and other nonprofit organizations.

- o Developing organizational incentives (including financial) for Federal laboratories, which will strengthen their support of technology transfer and commercialization of laboratory research results.

- o Strengthening means by which U. S. industry can participate in determining the Nation's basic research agenda.

- o Investigating the advantages of extending the 25 percent R&D incremental tax credit to those that need it most, including new start-up ventures.

Chapter III: Report On Section 5, Commerce and Technological Innovation

Section 5 provides for the establishment of an Office of Industrial Technology and a Director who is required to undertake a number of duties, including studies and policy experiments aimed at strengthening the world position of the United States in generating new technology.

In implementing Section 5, the Secretary of Commerce established the Office of the Assistant Secretary for Productivity, Technology and Innovation (PTI), appointed an Assistant Secretary to head that Office, and charged him with the responsibility for carrying out Commerce's responsibilities under P. L. 96-480. Section 5 activities undertaken by PTI include:

General Policy Initiatives

A series of noninterventionist initiatives taken to remove barriers to innovation and provide incentives for private sector innovation have resulted in:

- Proposed legislation designed to modify the antitrust laws to encourage cooperative R&D by U. S. companies.
- A Memorandum of Understanding with the Federal Laboratory Consortium designed to make easier commercialization of Federally funded technology.
- A Presidential Memorandum requiring all agencies, within their statutory limitations, to grant back to contractors exclusive rights to Government funded technology.
- A major conference that highlighted key issues involving taxes, antitrust barriers and mechanisms for financing the innovation process.
- A President's Commission on Industrial Competitiveness to make specific recommendations on increasing industrial innovation.

- o A National Technology Medal to be awarded annually by the President.

- o Proposed legislation designed to strengthen intellectual property rights held by developers of software and microchips.

In addition, other initiatives currently being pursued include:

- o Review of national manpower shortages of scientists and engineers, and investigation of methods for developing videodisc-computer interactive teaching systems to improve the quality and productivity of education in these areas.

- o Analysis of management methods and organizational structures required for greater adaptability to change and for better integration of R&D into the strategic planning process of industrial concerns.

- o Strengthening the in-house capabilities of Federal Laboratories to identify technology that has commercial potential and to disseminate it in useful formats to the private sector.

- o Integrating and coordinating DOC productivity programs that are now fragmented and sometimes redundant.

- o Developing legislation to extend further contractor ownership of Federally funded inventions not now covered under P. L. 96-517.

Industrial Technology Partnerships Program (ITP)

As part of its program to encourage private sector R&D, the Department of Commerce has launched the Industrial Technology Partnership (ITP) program. The principal element in this program is promotion of the use of R&D Limited Partnerships to finance later stage R&D for new products and processes without direct Government funding.

The Research and Development Limited Partnership is a method of financing R&D which is an alternative to direct in-house funding, borrowing, or venture capital funding. The advantages include the following:

- It draws on previously untapped venture capital--rather than more traditional retained earnings or borrowing by corporations--into the financing of R&D.

- It is available to all companies regardless of their cash or competitive position.

- It reduces the risk for producers or other users of process or product innovations by transferring that risk to a large number of limited partners.

- No loss of equity ownership is necessary.

- It allows a scale of effort beyond the risk or cash-floor threshold of the individual companies involved.

The Department of Commerce is encouraging the use of this concept through a number of initiatives, including:

- Preparing and disseminating detailed guidelines for forming RDLPs by large and small companies.

- Sponsoring educational forums for industry associations, universities, research institutes, Government laboratories and individual entrepreneurs. Four regional workshops are being scheduled.

- Clarifying ambiguities in present tax laws with the Treasury Department.

- Conducting competitive assessments of industry trends, of sensitive factors in manufacturing, and of the impact of new technologies on existing businesses, for use by private sector firms and public policy makers.

- Implementing a search and analysis process that packages Federally funded technology for licensing to the private sector.

There is evidence of widespread interest in RDLPs, and a growing number are forming in the 25 million to 100 million dollar range. Financial institutions such as E. F. Hutton and Merrill-Lynch have syndicated open RDLPs without designating specific programs in advance.

Industry Competitiveness Assessments

The Office of the Assistant Secretary of Productivity, Technology and Innovation has carried out six in-depth and thirteen preliminary assessments of selected industries. Eight additional in-depth studies are being scheduled. Results of these sophisticated analyses will be communicated to interested Government agencies and to companies involved in each industry. RDLP consortia are expected to find these studies important for their strategic planning.

Much of the data needed for these assessments is not available in Government data bases and must be gathered from the private sector. A cooperative agreement to develop the required information has been worked out with a nonprofit private sector organization that has access to such data.

National Technical Information Service (NTIS)

NTIS operates the world's largest data base and is the only organization that catalogs in accessible form much of the Federally funded technology that otherwise would be lost to commercial interests. NTIS is now being organized to conduct selective searches of industry-specific technology for licensing by the private sector. The information will be categorized in business portfolio format. It is anticipated that this portfolio can be used routinely to provide a world scan of new developments for use by technology ventures (including RDLPs). NTIS has also reached agreements with many foreign nations to access technical developments in those countries. Translations from foreign languages are performed by NTIS or contractors.

Small Business Innovation Resources Program

This is a new PTI initiative to develop strategies for assisting high technology small business firms to become more competitive by gaining access to information regarding:

- Technologies available for licensing from the Federal Government.
- Financing for innovation and productivity improvement.
- Markets for innovation and new technologies.

- o Existing services to aid innovation, such as "business incubators" and technical evaluation of inventions.

- o Policy affecting smaller firms involved in innovation and/or technology transfer.

A support network will be developed for small high technology firms. The network will include public and private organizations and resource services that can assist such firms in the innovation process.

Government Patent Policy

On February 18, 1983, the President signed a memorandum directing Federal agencies to extend the policy of contractor ownership of inventions that P. L. 96-517 established for small business and nonprofit organizations to all research and development contractors. This new policy is a major step in ensuring that Government funded technology is available to the private sector for commercial use. In most cases, the inventing contractor is most likely to have the knowledge and motivation to commercialize new technology. The statutes of a few agencies still restrict this policy to some degree, and legislative efforts are under way to remove these last barriers to a uniform Government patent policy.

Chapter IV: Report On Section 6, Centers for Industrial Technology and Section 7, Grants and Cooperative Agreements

Sections 6 and 7 were designed to encourage cooperative R&D by providing seed money to Centers for Industrial Technology (CITs) that are affiliated with a university or other nonprofit institutions.

Initiatives To Establish Cooperative R&D Arrangements

The CITs and accompanying grants envisioned in sections 6 and 7 have not been established. As part of Government-wide budget recisions proposed by President Reagan in fiscal year 1981, the Department proposed and the Congress agreed to rescind the DOC funding for CITs. Instead, the Department decided to attack the key impediment to cooperative R&D arrangements--concerns about antitrust.

The Administration's proposed antitrust legislation, The National Productivity and Innovation Act of 1983, will greatly ease the antitrust constraints on cooperative R&D programs. Once free of the "chilling effect" of antitrust uncertainty, the private sector will be able to design many organizational vehicles for the accomplishment of cooperative R&D without direct Federal Government participation.

Joint ventures often may be necessary to lower the risk and cost associated with R&D. Under the Administration's proposal, so long as ventures do not aid price fixing (through, for example, exchange of information on prices or production levels), or reduce innovation (by, for example, a tacit agreement to underinvest in R&D), the ventures do not violate the antitrust laws. Title II of the bill provides that the courts may not find a joint R&D venture to be illegal in and of itself. Specifically, it will prevent courts from finding that any joint R&D venture violates the antitrust laws without first finding that it actually has anticompetitive effects that outweigh its procompetitive effects.

A second provision of Title II provides that firms operating a joint R&D venture that has been fully disclosed to the Department of Justice and the Federal Trade Commission may be sued only for the amount of the actual damage caused by any anticompetitive conduct, plus prejudgment interest. Currently, an injured private party who wins an antitrust damage suit is automatically entitled to treble damages. The threat of such suits may inhibit the formation of joint R&D. The Administration's proposed changes should encourage the formation of procompetitive joint R&D ventures, and, unlike some other proposals currently before Congress, they will do so with minimal administrative requirements.

The Administration's proposal deliberately excludes restrictive clauses, such as compulsory licensing of research results of the cooperative venture after a certain period, as proposed in other legislation. While compulsory licensing may not be unreasonable for the electronics industry, where the average life cycle of a new product is now three to five years, for pharmaceuticals or specialty chemicals it might create a substantial disincentive to cooperative R&D, because the FDA or other regulatory clearance process may take five to ten years.

Even prior to passage of this new legislation, the private sector has formed unique cooperative research organizations such as the Microelectronic Computer Corporation and the Semiconductor Research Corporation. After the passage of the new legislation, cooperative R&D activity should increase sharply, mobilizing large gains in private funding. More importantly, the projects undertaken will likely include those beyond the financial or technical capability of even the largest firms alone, i.e., those that otherwise would probably never be undertaken at all.

In addition to the antitrust initiative, the tax incentives in the Economic Recovery Tax Act (ERTA) of 1981, which include the incremental R&D tax credit and the tax credits for contributions of equipment to universities, have been created to encourage increased R&D. Using the tax system rather than direct funding, the Administration believes it can stimulate industrial growth in an even-handed way and avoid a direct role in private sector decision-making, including avoidance of the Government choosing winning technologies.

Taken together, the tax and antitrust initiatives, along with the Industrial Technology Partnership program (RDLP) for later-stage R&D, represent a package which implements the overall objectives of Sections 6 and 7 of P. L. 96-480.

Centers for Industrial Technology are forming without direct Government funding. Many universities are developing Technology Management Offices that have undertaken many of the activities intended for CITs. The pace of developing these offices has accelerated since enactment of P.L. 96-517 in response to the requirement to manage and license inventions resulting from Federal R&D funding that the university chooses to own in accordance with the Act. Preliminary reports indicate a significant surge of disclosures of such inventions since enactment of P.L. 96-517. In addition to patent licensing, many of these offices have become involved in other aspects of industry/university cooperation similar to those anticipated by Section 6. This is due, in part, to their authority to consummate cooperative R&D ventures with industry that involve the transfer of future invention rights on an exclusive basis. Once accepted as a communications path, these offices are being asked by industry and university investigators to help develop more complex arrangements, e.g., the Monsanto-Washington University (St. Louis) agreement.

Based on the activities of the more successful university Technology Management Offices, it appears that an ideal office has the authority and ability to at least:

- o Identify, evaluate, protect and disseminate information on new university technologies.
- o Promote commercial use of and respond to industry inquiries concerning new technologies produced by the university, which may lead to new business ventures.
- o Alert university research management to industrial needs, particularly those of small business.
- o Fund research from royalty receipts.
- o Seek venture capital.
- o Enter into cooperative research projects, including limited partnerships.

- o Establish policies encouraging employee-inventor start-ups and follow-on participation.
- o Share royalties with inventors and the research organization.
- o Conduct training on invention, entrepreneurship and industrial innovation.
- o Assess potential conflicts of interest.
- o Grant patent licenses or assign future invention ownership rights as an incentive for industry cooperation in developing, participating in, or contributing resources for further laboratory research efforts.

This range of activities is much like the expanded role that the Department of Commerce foresees for the Federal laboratory Offices of Research and Technology Applications (ORTAs) created under Section 11 of Stevenson-Wydler Act.

Relatively few of the hundreds of university Technology Management Offices presently have this full range of authorities and abilities. The Department's view is that the Government has a significant opportunity to support the intent of Section 6 by providing technical assistance for the Technology Management Offices of universities and other nonprofit organizations that request it. Accordingly, the Department is examining techniques that may take the form of training courses to teach invention awareness to research performers and convey commercialization techniques to university and nonprofit Technology Management Offices.

Chapter V: Report On Section 8, National Science Foundation Centers For Industrial Technology

Section 8 Provides for NSF Centers for Industrial Technology.

The following charts summarize NSF's activities in supporting Centers for Industrial Technology. NSF funding in this area was at the $2.0M level in FY 1983 and is projected to be $3.0M in FY 1984.

NATIONAL SCIENCE FOUNDATION UNIVERSITY/INDUSTRY CENTERS.

LOCATION	SCIENCE AREA	DEGREE OF SELF SUFFICIENCY (% of Funding By Industry - Balance is Funded By NSF)
Massachusetts Institute of Technology	Polymers (Processing)	100
Rensselaer Polytechnic	Computer Graphics	80
Case-Western Reserve University	Polymers (applied)	70
Ohio State University	Welding	70
University of Massachusetts	Polymers (properties)	75
University of Rhode Island	Robotics	75
North Carolina State University	Telecommunications	70
Rutgers University	Ceramics	70
Georgia Institute of Technology	Materials Handling	80
Worchester Poly-technic Institute	Automation Technology	50
Texas A&M University	Hydrogen Technology	50
Pennsylvania State University	Dielectrics	60

(NOTE) ANNUAL INDUSTRY FUNDING FOR EACH CENTER IS USUALLY BETWEEN $500,000 and $1,000,000, WITH BETWEEN 5 AND 30 INDUSTRIAL PARTICIPANTS.

NSF CENTERS BEING PLANNED

LOCATION	SCIENCE AREA
West Virginia University	Fluidized Beds
University of Cincinnati	Digital Processing
University of Wisconsin	Biotechnology
Northwestern University	Tribology
University of Arizona	Microcontamination Control
Duke University and University of North Carolina	Biotechnology

Chapter VI: Report On Section 11, Use of Federal Technology

Section 11 provides for a central focus in the Department of Commerce and for the establishment of offices in the Federal laboratories to transfer Federally owned or originated technology to state and local governments and to the private sector.

Center for the Utilization of Federal Technology (CUFT)

CUFT was established within the National Technical Information Service of the U. S. Department of Commerce in June 1981. It received appropriated funding in January 1983. The CUFT program is directed to:

- Encourage agency technology evaluation efforts;
- Improve the public's online access to technology furnished to CUFT by the Federal laboratories;
- Promote private sector and local government awareness of Federal laboratory technology;
- Encourage the licensing of Federally owned inventions through the patent licensing function attached to CUFT;
- Highlight Federal laboratory technology having significant potential for commercialization;
- Maintain a directory of Government technology transfer personnel.

A variety of products and services have been planned and developed to improve industry access to Federal laboratory technology, including:

- Tech Notes: A monthly subscription service alerting readers to the latest technology from the Federal laboratories through one or two page fact sheets describing new processes, equipment, materials, and techniques with potential commercial or other practical application.
- Federal Technology Catalog: An index of more than 1,200 new technologies identified by Federal laboratories.

- o <u>Catalogs of Government Patents</u>: A listing of Federally owned and patented inventions available for licensing.

- o <u>Government Inventions for Licensing Abstract Newsletter</u>: A weekly subscription newsletter summarizing Federally owned inventions divided into 11 categories. When appropriate, a drawing of the invention is also provided.

- o <u>Directory of Federal Technology Resources</u>: This directory, available in early 1984, will describe special technical resources provided by the Federal agencies and their laboratories. It will include equipment for sharing, technical information centers, laboratory contacts available for technology interchange, software sources, information analysis centers, and other services.

- o <u>Federal Technology Transfer-Online. A Reference Guide</u>: A free service provided to online computer searchers interested in <u>Tech Notes</u> or information on Federally owned inventions. This service explains how to receive this information by computer.

CUFT personnel are involved in a number of other projects, including:

- o Cooperation with the Federal Laboratory Consortium in order to develop working relationships with agency technology transfer personnel.

- o Contacting small business associations, state innovation groups and trade journals, to emphasize the availability of Federal laboratories technology.

<u>Research and Technology Application Offices</u>

Section 11 requires each laboratory to establish an Office of Research and Technology Applications (ORTA) to assist the laboratory in the transfer of its technology. The Appendix to this report summarizes information provided by the agencies on the technology transfer activities undertaken by their ORTAs.

A major function of the ORTAs is to prepare application assessments of R&D projects that have potential for application to state and local government or industry. Notwithstanding the ORTA's assignment, the lack of uniform guidelines, criteria, and processes in preparing application assessments appears to have produced difficulty in determining and communicating a new technology's commercial potential. This may be particularly true when the process involves finding secondary uses for technology developed primarily to meet a unique Government need.

A second function of the ORTAs is actual transfer of technology. Technology can be transferred in two basic forms:

- <u>Information</u>--which includes advice, technical assistance, reports, and other forms of aid. This is usually provided at minimal or no cost and is based on work already performed in the laboratory system.

- <u>Intellectual Property</u>--which includes patents, copyrights, technical data, rights to future inventions, and other forms of technology that can be owned, protected, assigned, or otherwise controlled.

Information

A review of the agency activities outlined in the Appendix indicates that most ORTAs have concentrated on information transfers. These are less formal, easier to arrange, and appear more consistent with the wording of Section 11.

Intellectual Property

Though the ORTAs have performed valuable services regarding the information form of technology transfer, they have been less involved in intellectual property transfer. Yet opportunities to help create new products, large numbers of new jobs, and even new industries are likely to come primarily from intellectual property transfers because investment recovery and profits often depend on ownership or control of the technology being developed.

Patent licensing is the type of intellectual property transfer most used at the Federal agency level as a private sector incentive for development of Federal laboratory inventions. This is done primarily on a centralized basis, either by the patent staffs at agency headquarters or the patent licensing function attached to the Center for Utilization of Federal Technology.

Successful promotion of some inventions may require the resources of centralized licensing organizations with access to potential nationwide and international users. For example, centralized licensing offices can target advertising of specific technologies for ORTAs (which could handle other aspects of the transfer), as well as provide advice and training to the ORTAs.

The following problems, however, have been observed:

- o There have been misinterpretations that the licensing provisions of P. L. 96-517 require nonexclusive licensing if more than one firm applies for a license.

- o Centralized licensing offices tend to concentrate on inventions that meet a known commercial need and are the easiest to sell. These offices may do less well than decentralized operations at the laboratory level in becoming advocates and market creators for technologies that were not developed to meet a specific private sector need or are more suitable for development by start-up companies.

ORTAs (and licensing offices) which are decentralized have natural advantages for some types of technology transfer because of their immediate proximity to the laboratories. Laboratory research could be more effectively transferred to industry by a "full service" ORTA performing the following functions:

- o Identifying, evaluating, and arranging for protection of new technologies.
- o Promoting commercial use of the new technologies produced by the laboratory which may lead to new business ventures.
- o Coordinating with ORTAs of other laboratories, when necessary, to meet the needs of industry for Federal technologies from more than one source.
- o Recommending research to meet market needs.
- o Seeking venture capital to help start-up ventures.
- o Entering into collaborative research projects with industry, including limited partnerships.
- o Administering policies that encourage employee-inventor start-ups and follow-on participation.
- o Administering a royalty sharing program with laboratory inventors and with any part of the laboratory deemed to have contributed to the invention which generates the royalties.
- o Training and instructing on invention, entrepreneurship and industrial innovation.
- o Assessing and advising on potential conflicts of interest.
- o Granting patent licenses or assigning future invention ownership rights as an incentive for industry cooperation in developing, participating in, or contributing resources for further laboratory research efforts.

These functions are much like those performed by the ORTA counterpart offices in universities.

It appears to be no accident that technology complexes such as Silicon Valley, Route 128, Research Triangle, and Princeton's Forrestal Center have evolved around major universities. Direct access to the university and the university's right to transfer the results of its research on an exclusive basis is an important incentive for business to invest in the further

development and commercialization of new technologies. In contrast, Federal laboratories generally have not served as nuclei for similar arrangements. They often perceive themselves as unable to enter into cooperative development arrangements because of organizational and legal restraints. This is one reason why national reviews of Federal laboratories have concluded that too little of the results of laboratory research is used in the private sector.

The present authorities of most ORTAs are limited and unclear. In order to perform the full range of desirable functions discussed above, consideration should be given to augmenting the ORTA role as follows:

- Authority to negotiate the assignment or licensing of Government-owned inventions.

- Authority to negotiate arrangements that include disposition of future research results on an exclusive basis, acceptance of private sector funding, and formation of Government/private sector research teams.

- Authority to administer incentives to Federal employee inventors, including royalty sharing and the right of employees to own inventions that neither the Government nor a participating private sector organization plans to commercialize.

- Authority (with appropriate limits) to arrange for Federal employee inventors to participate in the future development of an invention outside of the lab when this is necessary for successful commercialization.

In addition, it may be useful to establish a system of organizational incentives that encourages the laboratories to support technology transfer and commercialization. One element could be retention by the laboratories, (e.g. the Director's Office) of part of the royalties to use for future research. Care must be exercised to ensure that budgetary controls are not weakened and that a proper balance is maintained between Federal research missions and commercialization efforts.

Further, techniques should be developed and made available to the ORTAs to help evaluate the commercial potential of new technologies. These are particularly necessary to evaluate ideas that were not developed to meet a known private sector need.

Finally, in order for the ORTAs to achieve their full potential, trained professionals will be needed to engage in technology transfer. The Department recommends consideration of a new category of professional employees, entitled, "Federal Technology Managers" (or another appropriate title) to implement the new authorities outlined above. The Department suggests that previous legal, engineering, technology transfer and product development experience be taken into full account when filling positions and making promotions in this new category of professional employees. These ORTA officials would work directly in the laboratories to stimulate collaboration with the private sector and would be key elements in spinning off important discoveries to industry. The "Federal Technology Managers" would function as a critical liaison between the research professionals employed in the laboratories and the private sector.

Chapter VII: Report On Section 12, National Technology Medal

Section 12 provides for the establishment of a National Technology medal which is to be awarded periodically by the President to individuals or companies for outstanding contributions to the promotion of technology or technological manpower.

Procedures for the selection of recipients of the Medal are in effect. A Steering Committee, chaired by the Assistant Secretary for Productivity, Technology and Innovation, solicits nominations and refers them to an Evaluation Committee, currently being chartered under the Federal Advisory Committee Act. Recommendations for awards are forwarded to the Secretary through the Steering Committee.

A Press Release soliciting nominations for the Medals was released August 17, 1983, with nominations to be received between September 1 and November 30, 1983, and between May 1 and July 31 of succeeding years.

The first Medals are expected to be awarded in the Spring of 1984.

Chapter VIII: Report On Section 13, Personnel Exchanges

Section 13 provides that the Secretary of Commerce and the National Science Foundation (NSF) jointly shall establish a program to foster exchange of scientific and technical personnel among academia, industry, and Federal laboratories. In light of similar programs already being run independently by Commerce and NSF, no action has been taken to implement this Section.

APPENDIX: SUMMARY OF AGENCY REPORTS ON OFFICE OF RESEARCH AND TECHNOLOGY APPLICATION (ORTA) ACTIVITIES

Introduction

In addition to the reporting requirements for the Department of Commerce under Section 5(d), agencies are required by Section 11(e) to report as follows:

> "Each Federal agency which operates or directs one or more Federal laboratories shall prepare biennially a report summarizing the activities performed by that agency and its Federal laboratories pursuant to the provisions of this section. The report shall be transmitted to the Center for the Utilization of Federal Technology by November 1 of each year in which it is due."

The Secretary of Commerce requested that relevant Federal agencies submit the report required by Section 11 of the Act for the two-year period October 1, 1980, to September 30, 1982. Summaries of these reports, which include brief descriptions of each program and some achievements, are provided in this Appendix.

Section 11 requires that each Federal laboratory establish an Office of Research and Technology Applications (ORTA). Further, each laboratory with a total annual budget in excess of $20 million shall provide at least one professional full-time individual to staff the ORTA; and beginning in FY 1982, each Federal agency directing a laboratory shall make available not less than 0.5 percent of the agency research and development budget to support technology transfer, including operation of the ORTA. The Act assigns the following four functions to an ORTA:

1. Assess each R&D project which has potential for successful application in state or local government, or in private industry;

2. Provide and disseminate information on Federally owned/originated products, processes, or services having potential for application in state or local government, or in private industry;

3. Cooperate with the Center for the Utilization of Federal Technology and other appropriate organizations to link Federal R&D as a whole to potential users; and

4. Provide technical assistance when requested by state and local government officials.

Because this is a relatively new effort for many laboratories, there is insufficient information to develop any type of Government wide evaluation measure of technology transfer effectiveness. It is clear, however, that within Federal agencies there is a wide range of definitions and anticipated results for the technology transfer process. Most agencies have a technology transfer program for the movement of mission-oriented research to mission-oriented application. But, there are very few agencies that look for "spin-off" applications and attempt to seek application of their research beyond the original mission.

The greatest effort being exerted by many agencies is in the processing and dissemination of written information. Much of the dissemination is done through publications/communications groups unique to the agency and directed to an agency mission-targeted audience. Also, there is some evidence that information dissemination is believed to be sufficient, in and of itself, to effect technology transfer.

The primary examples of cooperative efforts with industry are participation by laboratory representatives at workshops and meetings. In addition, although there are references to the performance of the technology application assessment function of the ORTA, there seems to be some uncertainty regarding the appropriate method to produce the assessment and its ultimate use.

Finally, many agencies reported dedication of major resources--both budget dollars and personnel time--to the technology transfer function. Few agencies reported active, long range planning and/or evaluation efforts directed toward achieving a satisfactory level of performance or developing the most cost effective program.

Summaries of the agency reports are provided below:

U. S. DEPARTMENT OF AGRICULTURE (USDA)

Two agencies of the U. S. Department of Agriculture (the Agricultural Research Service and the Forest Service) operate Federal laboratories. For many years the USDA has utilized the Federal-State Cooperative Extension Service and State and Private Forestry System to transfer technology rapidly and successfully. Additional steps have been taken to implement the requirements of the Stevenson-Wydler Technology Innovation Act of 1980 (P.L. 96-480) as follows:

Agricultural Research Service (ARS)

Since the passage of P.L. 96-480, the ARS has appointed an Assistant Director from the Northern Regional Research Center to coordinate the technology transfer activities in the four large Regional Research Centers. Recently, a Science and Technology Applications Coordinator was appointed to plan, oversee and coordinate the ARS technology transfer activities at the Headquarters level. A plan to achieve full compliance with P.L. 96-480 has been drafted and will be incorporated into the new ARS organizational structure.

Achievements Reported

- A safer and more effective vaccine for foot and mouth disease (FMD) has been made possible by breakthrough research in genetic engineering. The vaccines resulting from this technology will help the U.S. stockpile vaccine, produce an annual savings of billions of dollars in countries with FMD, reduce barriers to international trade, and increase the world supply of meat.

- Caseous lumphadenitis abscesses caused by the bacteria *Corynebacterium ovis* is one of the most important worldwide diseases of sheep and goats. ARS developed an antibody test that indicates past or present infection. The test, which uses an enzyme as an indicator, is simple, economic, fast and nonhazardous.

- Fast-food merchandising and salad bars have greatly increased demand for mild-flavored onions. Unfortunately, such onions neither store well nor are adapted to northern producing areas. ARS scientists produced a new nonpungent, high-yielding hybrid with good storage quality. Wide-scale testing has generated enthusiastic response, and export potential may be significant.

- Of the 32 ARS patents transferred to NTIS, four exclusive and 28 non-exclusive licenses have been granted. The patents include "Anti-Feedant for Boll Weevils," "Preparation of Frozen Quick Cooking Legumes," and "Tool for Welding Plastics." The patents have been licensed to such companies as Pennwalt Corp., Metal Recovery System, and Amity Soyfoods, Inc.

Forest Service (FS)

In 1978, the Forest Service (FS) established an organizational unit similar to that called for in P.L. 96-480. Following passage of P.L. 96-480, the unit was designed as the FS Office of Research and Technology Application (ORTA). Located in the Area Planning Development Staff of the State and Private Forestry branch in the Washington Office, the ORTA is responsible for FS-wide technology transfer activities. The ORTA is staffed by one full-time professional and a staff technician.

Achievements Reported

- Builders in 27 states are using or have expressed interest in a Truss-Framed Building System developed by the FS Forest Products Laboratory. More than 1,300 homes have been constructed using this system, which provides savings in the use of wood and wood base materials.

- The Forest Products Laboratory developed the concept of press drying paper which will permit paper manufacturers to use 100 percent hardwood pulp for linerboard for the first time. Several commercial laboratories have built press dryers to test research concepts to demonstrate the research. Black and Clawson, a paper machine manufacturer, is developing a press dryer for the commercial market.

- The states of Maryland and Minnesota are using the Timber Inventory/Management Information Planning System which was developed by Forest Service researchers to assist landowners of small private forests. Five other states are considering the use of this system.

U. S. DEPARTMENT OF COMMERCE

Four agencies of the United States Department of Commerce are covered by the requirements of the Stevenson-Wydler Technology Innovation Act of 1980. These agenices are the National Bureau of Standards, the National Oceanic and Atmospheric Administration, the National Telecommunications and Information Administration, and the National Technical Information Service. Except for the National Technical Information Service, the other three have laboratory facilities.

National Bureau of Standards

The National Bureau of Standards (NBS) established the Office of Research and Technology Applications (ORTA) on March 1, 1981. The intent was to augment and exploit NBS activities to make Federal technology readily accessible to private industry and state and local governments.

The FY 1982 direct budget of the office was $.25M, excluding the cost of administering the Visiting Committee and the Evaluation Panels. In FY 1982, $16M within NBS was dedicated to implementing technology transfer under the functions of the ORTA.

Achievements Reported

- The ORTA staff addressed each NBS R&D project and found 216 projects with potential value to U.S. industry. These projects were disclosed to members of the Industrial Research Institute and many other U.S. firms at meetings of their respective industry associations.

- NBS reports that inquiries about Federal technology are at an all-time high, particularly regarding the NBS Industrial Research Associate Program. During FY 1981, NBS had 41 Research Associate programs with 124 Research Associates. During FY 1982, there were 44 programs with 121 Research Associates from such U.S. firms as Allen-Bradley, Structural Dynamics Research Corporation, Mobil Research and Development Corporation, Rheology Research, Hardinge Brothers, Johnson Controls, Exxon Chemical Company, and General Electric.

- To further assist industry and state and local governments to acquire Federal technology, the NBS ORTA aided the Federal Laboratory Consortium in developing a "Tools of the Trade" primer and prepared a "Directory of Federal

Laboratories". ORTA supported the Model Interstate Information Clearinghouse (MISTIC) of the National Conference of State Legislatures, arranged for computer conferencing between NBS and state legislatures through Legitech, and provided numerous responses to inquiries from local officials. Finally, the ORTA assisted Pennsylvania, Ohio, and Maryland officials in arranging regional meetings on the availability of technology from various Federal laboratories which might be useful to local businesses.

National Oceanic and Atmospheric Administration

The National Oceanic and Atmospheric Administration (NOAA) conducts a wide range of research and development activities. Five NOAA Line Organizations (LOs) contribute to the total NOAA R&D effort, each concentrating in its area of mission responsibility. The five LOs are:

- Office of Oceanic and Atmospheric Research (OAR)
- National Weather Service (NWS)
- National Ocean Service (NOS)
- National Marine Fisheries Service (NMFS)
- National Environmental Satellite, Data, and Information Service (NESDIS)

To ensure an integrated and coordinated agency response to P.L. 96-480, NOAA has established a Technology Transfer Working Group consisting of a representative from each of the LOs.

Assessment of the potential for nonFederal application of NOAA R&D and technology is done at the source, (i.e., at the laboratories, centers, and R&D project offices). A designated ORTA contact at each NOAA R&D facility is responsible for the routine assessment of R&D projects at the facility and for the preparation of application assessment abstracts for dissemination.

Achievements

NOAA has established a technology transfer program to ensure the agency's compliance with both the spirit and letter of P.L. 96-480. Listed below in chronological order are the events which led to the implementation of the program:

- In April 1982 the Deputy Administrator of NOAA assigned responsibility for the development of a NOAA program to the Environmental Data and Information Service and directed the formation of a Working Group to coordinate program planning.

- During the summer and fall of 1982, the Working Group developed interim plans and conducted a pilot program to test them. All NOAA R&D activities were assessed to determine the potential for nonFederal application of the research, and over 130 Application Assessment Abstracts were submitted to the Working Group by NOAA's laboratories, centers, and R&D project offices.

- In January 1983, a full-time ORTA was established in the NESDIS Office of External Relations. A long-term NOAA Technology Transfer Program Plan was completed in May and approved in June 1983.

- In July 1983, a full-time Technology Transfer Specialist was added to the NOAA ORTA staff.

- NOAA joined the Federal Laboratory Consortium in July 1983. NOAA also established contacts with other Federal and state technology transfer organizations.

National Telecommunications and Information Administration

The Institute for Telecommunication Sciences (ITS) is the chief research and engineering arm of the National Telecommunications and Information Administration (NTIA).

ITS allocated approximately $15,000 per year to assure dissemination of research reports through its Technical Publications Office. In addition, ITS has allocated approximately $100,000 over FY 1981 and FY 1982 to make available computer programs to aid the private sector in planning and operating various communications systems.

Achievements Reported

- During 1981, ITS efforts facilitated approval by the Federal Communications Commission (FCC) of applications to offer direct broadcast satellite service. The deployment of direct broadcast satellite systems in the U.S. could result in very substantial new demand for satellite earth terminals and related equipment.

- Beginning in 1980, and continuing to the present, ITS has worked to develop technically feasible means by which the hours of operation of small daytime-only radio broadcasting stations could be significantly improved and their numbers increased. ITS technical expertise and research also played an important role in U.S. preparation for the 1982 World Administrative Radio Plenipotentiary Conference.

National Technical Information Services (NTIS)

The National Technical Information Service (NTIS) plays a major role in the development of advanced information products and services for the achievement of U.S. productivity and innovation goals in the 1980's. NTIS is the central source for the public sale of U.S. Government-sponsored research, development, and engineering reports, software, and other analyses prepared by Federal agencies, their contractors or grantees. Its program supplements technology transfer activities of all Government agencies.

Since NTIS is not a laboratory and funds no research, it does not have an Office of Research and Technology Application (ORTA). The NTIS budget involved in technology transfer was approximately $16.7M in FY 1982. This included the functions of the Center for the Utilization of Federal Technology (CUFT) and the Office of Government Inventions and Patents.

<u>Achievements Reported</u>

- In its interagency patent licensing program, NTIS negotiated and granted over 40 patent licenses in FY 1983 on behalf of HHS, Commerce, USDA, and Interior, which represents a 50 percent increase over FY 1982. Royalty revenue increased five-fold to the $800,000 level, making the program self-supporting. This includes costs of creating and maintaining a large foreign patent portfolio for licensing to U.S. industry. Proposed development plans submitted with applications for 49 of the licenses granted in the last two years committed $139.8 million in further private sector R&D to commercialize these Government inventions. New CUFT information products introduced in 1983 included:

- <u>The Federal Technology Catalog</u>,
- <u>Federal Technology Transfer-On line</u>, and
- <u>Directory of Agency and Laboratory Technology Transfer Contacts</u>.

NTIS PATENT LICENSES GRANTED FY 1981 - FY 1982

Department of Agriculture

(Title)	
Nematocide	Pennwalt
Particle Board	Purdue Research Foundation
Pueromone Insecticide	Albany International
Insect Maturation Inhibitors	Stauffer Chemical
Boll Weevil Antifeedant	Bio-Systems Research

Department of Army

Cellulase Producing Microorganism	IFP

Department of Commerce

Clear Air Turbulence Detector	Bendix Corporation
Laser Wavelength Meter	Lasertechnics Inc.
Ultrablack Coating	Ball Corporation
Frequency Stablization	Efratom Systems Inc.
Cryptographic Key Notorization	P.E. Systems Inc.
Rotating Tool Wear Monitor	Valeron Corporation
Echometric Remote Temperature Measurement	Radian Corporation
Contrast Resolution Ultra Sound Testing	Nuclear Associates

Department of Health & Human Services

Fecalator	Marion Scientific
Assay for Benzodiazapines	Neuobiological Sciences
Interferon Inducer	Behringwerke
Chromatographic Instruments	Buechi Laboratories Knots

HHS (cont'd)

(Title)	
Fiber Optic Probe	Advanced Technical Labs
Zwitterionic Detergent	Calbiochem Pierce Chemical Poly Sciences
Clot Lysing Timer	Beecher Co.
Oral Acne Drug (13 - cis retinoic acid)	Ortho Pharmaceutical Westwood Pharmaceutical McNeil Pharmaceutical Dermik Pharmaceutical
Toluidine Blue Rinse (Oral Cancer Detector)	Block Drug
Non-A, Non-B Hepatitis Detection	North American Biologicals Abbott Laboratories
Large Unilamellar Vesicles	Abbott Laboratories
Monclonal Antibodies against Herpes Virus	Abbott Lab. Cooper Biomedical
Blood Cell Separator	IBM Corp.
Countercurrent Extraction Apparatus	P.C. Inc.
Insulin Infusion Apparatus	Nordisk
Silver Stains for Protein	Electro-Nucleonics
N-Acetyl Cysteine Prevention of Cardiac Damage in Cancer Therapy	Mead Johnson

Department of Interior

Modified Sulfur Cement	Chevron Research FB Coatings JA Reece Inc. Sulcon. Inc. Chemical Enterprises

Veterans Administration

PALA Platinum Antineoplastics Drug	Adria Lab. Behringwerke, AG.

U. S. DEPARTMENT OF DEFENSE (DOD)

The Department of Defense (DOD) is the Federal agency responsible for the management control of the three Military Services. In fulfilling the requirements of the Stevenson-Wydler Technology Innovation Act of 1980 (P.L. 96-480), the DOD has waived the full-time staffing and monetary set-aside requirements for the Military Services, but has directed them to individually establish mechanisms to comply with the law, including establishment of Offices of Research and Technology Applications (ORTA).

Department of the Navy

The Navy has had a formal technology transfer program for over ten years and had been transferring technology to the civilian sector on an ad hoc basis for many years before that. Following passage of P.L. 96-480, ORTAs were created for the ten major R&D activities to ensure compliance with the law. Further, a series of major policy statements has been issued regarding e Navy domestic technology transfer program.

An estimate of the FY 1982 cost of performing the ORTA function at each major R&D activity is shown in the table below, including cost estimates for coordinating the program and funding domestic technology transfer demonstration projects. These costs are expected to increase as awareness of the program increases.

Department of Navy
FY 82 ($ K)

Laboratory	ORTA Cost
Naval Air Development Center	80
Naval Coastal Systems Center	5
Naval Ocean Systems Center	40
Naval Personnel Research and Development Center	40
David Taylor Naval Ship Research and Development Center	80
Naval Surface Weapons Center	20
Naval Underwater Systems Center	80

Naval Weapons Center	30
Naval Research Laboratory	120
Naval Ocean Research and Development Activity	2
	$ 497

Navy-Wide Technology Transfer

Publications and Exhibits	160
Demonstration Projects	70
Industry Information	300
	$ 530
TOTAL	$1,027

The publication of thousands of in-house Navy and Navy-sponsored technical reports is the largest and most significant technique used by the Navy. Many Navy activities publish annual listings of their technical output.

Achievements Reported

- o The Naval Underwater Center (NUSC) initiated the Technical Volunteer Service (TVS) whereby nearly 400 volunteers provide information, assistance and advice to local Governments. Two other Navy laboratories will initiate TVS programs in FY 1983 and several other Federal laboratories are exploring the concept.

- o The Navy Personnel R&D Center (NPRDC), which is developing more effective methods and procedures for teaching Basic Skills, produced a computer software package for the teaching of vocabulary and reading comprehension. In response to a request from the San Diego Community College, technical assistance from NPRDC resulted in competency-based adult education classes in the Community College District.

- o The Navy performs manufacturing technology projects to demonstrate production feasibility by industry of critically needed items. Successful transfer projects during FY 1981 and FY 1982 include:

  - Naval Research Laboratory -- laser welding, ion beam milling, ion implanation;

- Naval Surface Weapons Center -- graphite-aluminum tape and tooling, laser hardening of cams; and

- Naval Ocean Systems Center -- fiber optic digital receiver modules, high radiance light emitting diodes, automate layout of circuits.

o Patented Navy inventions are licensed on both a limited and nonexclusive basis. Two examples of limited exclusive licenses include:

  - Naval Ocean Systems Center developed a decompression computer which can be worn on a diver's wrist to provide the diver with both his current depth and safe-ascent depth; and

  - Naval Surface Weapons Center developed a pyrotechnic chemical composition which can be used in an underwater incendiary cutting torch.

Department of Army

The Director of Army Research in the Office of the Deputy Chief of Staff for Research, Development and Acquisition is responsible for managing the technology transfer function. Management actions during the reporting period include:

o Army Regulation 70-57, which mandates the technology transfer activity and was revised in August 1982 to emphasize provisions of the Stevenson-Wydler Technology Innovation Act of 1980 (P.L. 96-480);

o Meetings in May and November of 1982 to coordinate technology transfer functions;

o Identification of thirty-five Army laboratories as requiring Offices of Research and Technology Applications (ORTA). These laboratories have been notified of the Army's support of the fulfillment of P.L. 96-480 and informed that beginning in 1983 each laboratory organization chart must show the ORTA and a direct point of contact; and

o Establishment and funding of two tasks (beginning in November 1982) to support the central management of the technology transfer function.

Achievements Reported

- o Pattern recognition techniques were applied to epidemiological analysis of patterns in Sudden-Infant-Death syndrome.

- o An instrument developed to provide a rapid, more effective means of presurgical hand and arm scrub by operatory personnel is now commercially available.

- o A Toxic Corridor Prediction (TOXCOP) Program developed to graphically depict downwind hazards resulting from accidental release of toxic chemicals has been used by a California city to design evacuation plans in event of major fires or chemical spills.

Department of the Air Force

In August 1981, the U.S. Air Force established an ORTA at each of its ten laboratories. All four of the ORTA technology transfer functions given in the Stevenson-Wydler Technology Innovation Act of 1980 are vested in the established ORTA. There are no ORTA personnel devoted exclusively to technology transfer. Since technology transfer is part of the overall mission of the laboratory, it is difficult to estimate either the amount of time or money dedicated to this activity.

In March 1982, Air Force Systems Command Regulation 80-25, "Technology Management Reviews", was revised to require that the Program Manager at each laboratory perform the technology application assessment mandated in P.L. 96-480. The Program Manager, after preparing the assessment, works with the ORTA to devise a plan to transfer the technology.

Achievements Reported

- o The Aerospace Medical Division (AMD) has developed the Subjective Workload Assessment Technique (SWAT), a computer program made available to several private and educational institutions. The program focuses on behavioral workload assessment. To date, AMD has transferred the program to Hughes Aircraft, Douglas Aircraft, Lockheed, Boeing, BDM Corporation and Arizona State University.

- o The AMD Integrated Sizing System and drawing board mannequins have been used by several clothing merchandising companies, e.g., Sears, Roebuck and Company, in establishing sizing data for military as well as civilian use.

- The AlLiMo thermal battery concept, formulated at the Frank J. Seiler Research Laboratory, was put out on developmental contract to Eureka Corporation of Illinois. The thermal batteries could be used on any system having short-term high power requirements with extremely high reliability.

- At least one small business has been started using an instrument developed at the Rome Air Development Center for the measurement of moisture content in integrated circuit packages.

- The Air Force Engineering and Services Center has provided technical consultations to the cities of Phoenix, Arizona; Natchez, Mississippi; Rockville, Maryland; Jacksonville, Florida; Madison, Wisconsin; North Miami Beach, Florida; and Escambia County, Florida; Broward County, Florida; Land of Sky Regions Council, North Carolina; the University of Kentucky; Ridgeways Chemicals, Inc.; and numerous other agencies.

U. S. DEPARTMENT OF ENERGY (DOE)

The Department of Energy (DOE) is organized to implement technology transfer through the 37 national multiprogram and program dedicated laboratories. The Office of Energy Research is responsible for Headquarters oversight and management of the program.

On March 25, 1982, DOE order 5800.1 "Research and Development Laboratory Technology Transfer Program", was issued to ensure that technology transfer is integrated into the operations of each R&D laboratory. The order details the objectives of the program and incorporates the technology transfer program into the existing laboratory planning and oversight process.

Each laboratory has an Office of Research and Technology Applications (ORTA) or equivalent. Those laboratories with an annual budget in excess of $20 million have a full-time professional devoted to the management of the program.

Achievements Reported

- o An ultrathinning technique developed by the Pacific Northwest Laboratory was transferred to the Medical College of Georgia to aid in examination of calicified tissues.

- o Sandia National Laboratories designed an electronically controlled pump, derived from weapon technology, that has provided reliable insulin delivery when implanted in diabetic patients. Design and know-how is being transferred to medical equipment manufacturers.

- o A geothermal power plant simulation computer program "GEOTHM" has been developed by Lawrence Berkeley Laboratory. It includes models of the properties of geothermal and geopressured brines at high temperatures. Bechtel has used the program in designing two geothermal power plants, one of which is now under construction in the Imperial Valley of California.

- o The Morgantown Energy Technology Center has helped the transfer to private industry of state-of-the-art simulation technology for large coal conversion process plants by the completion and delivery of the Advanced System for Process Engineering (ASPEN) software package. Developed by MIT under contract to Morgantown, the package is available through the National Energy Software Center and from the National Technical Information Service.

- Ames National Laboratory estimates an annual sales level of $100 million over 1,500 installations for the Inductively and Coupled Plasma-Atomic Emission Spectrograph developed at the laboratory.

- Los Alamos National Laboratory estimates over $800,000 in business by six instrument manufacturers from laboratory invented technology.

- Oak Ridge National Laboratory estimates that over $200 million has been invested by industry since 1978 in the uranium extraction process developed at the laboratory.

U. S. DEPARTMENT OF HEALTH AND HUMAN SERVICES (DHHS)

Within the Department of Health and Human Services (DHHS), the Public Health Service (PHS) is the only component that funds Federal laboratories for research and development as defined by the Stevenson-Wydler Technology Innovation Act. The PHS supports biomedical technology-related activities which include the conduct and support of basic, applied and developmental research.

The Public Health Service Act requires that the Secretary of Health and Human Services coordinates all research, evaluations, and demonstrations relating to the assessment of health care technology undertaken and supported through DHHS. The Technology Coordinating Committee is the mechanism for achieving this coordination. With representatives from DHHS, committee activities include research studies, special initiatives and plans, and conferences, workshops and symposia pertinent to health care technology.

In FY 1981, 17 percent of the R&D budget was devoted to technology transfer; in FY 1982, it was 16 percent. A summary follows of each agency's approach to technology assessment and transfer, and includes highlights of achievements.

PHS Funding for Research and Development and Technology Transfer Activities, FY 1981 and FY 1982, by Laboratory

	FY 1981 ($ in millions)		FY 1982 ($ in millions)	
	Total R&D Budget	Technology Transfer Budget	Total R&D Budget	Technology Transfer Budget
ADAMHA	$ 239	$ 35	$ 248	$ 38
CDC	71	28	69	26
FDA	71	3	73	3
NIH	3,320	571	3,419	560
Total	$3,701	$637	$3,809	$627

National Institutes of Health (NIH)

By supporting basic and applied research, the NIH provides a strong foundation for discovery of new knowledge and translation of that knowledge into medical technology. Once the assessment process indicates the safety and efficacy of new technology, individual groups promote widespread application through demonstration projects.

The Office of Medical Applications of Research (OMAR), which was established in the office of the Director, NIH, in 1977, has been designated as the Office of Research and Technology Applications (ORTA) for NIH. OMAR's staff consists of seven full-time professionals and three full-time support members. In FY 1981 and FY 1982, the funding allocated to OMAR's assessment and transfer activities was $1.5 million and $2.1 million, respectively.

Achievements Reported

- Seven conferences were held between 1980-1982 on various subjects including "Diagnosis and Treatment of Reye's Syndrome" (March 1981) and "Clinical Application of Biomaterials" (November 1982). Eight such conferences are scheduled for 1983-1984. In an effort to strengthen this effort, OMAR has undertaken three evaluation studies. The results show that although current dissemination reaches one-third of the target population, efforts should be expanded. The second study basically validated the current process but recommended that methods for directing data synthesis and selecting conference panelists could be improved. The final study, now in progress, is expected to produce recommendations for future activities to strengthen the dissemination process and enhance diffusion.

- Within the patent programs, our evaluation study revealed that patent applications have been filed for 40 percent of all inventions, approximately 70 percent of the filings have been awarded patents, and nearly 50 percent of the patented inventions have been commercially licensed. Approximately 14 percent of all NIH inventions have, at one time, been commercially licensed.

Food and Drug Administration (FDA)

As a regulatory agency, the FDA employs a strategy which is anticipatory rather than reactionary, and preventive rather than corrective. In implementing this strategy, FDA conducts applied research and development directed to the safety of the

Nation's food, cosmetics, drugs, medical devices, biologic and radiological products. Within the Office of the Commissioner, FDA, the Office of Scientific Coordination is responsible for overseeing the applied R&D conducted by all FDA components. The Office of Scientific Coordination has been designed as the ORTA at FDA.

Achievements Reported

The FDA's National Center for Devices and Radiological Health has effected two interesting transfers:

- The first was a collaborative effort with Johns Hopkins, SIEMENS Corporation, and Terminal Computers, Inc., to develop an electronic video report which transmits information instantaneously from radiologists to physicians. To promote its transfers, FDA produced a 16-minute documentary. Users have reported time savings, reduction in costs, and improved patient care.

- The same FDA Center established a consortium of hospitals to test the use of laser high-density storage discs for x-ray information. Through FDA, Phillips has loaned a storage system to a hospital in St. Louis and RCA has loaned a system to the University of Pennsylvania for similar testing.

- FDA also has developed a portable neutron spectrometer to measure neutron radiation being emitted during high-energy dose applications from linear accelerators. Thus far, two patents have been issued and are available for use by the private sector.

Center for Disease Control (CDC)

CDC programs are administered through: the centers for prevention services, environmental health, health promotion and education, professional development and training, and infectious diseases; the National Institute for Occupational Safety and Health; and program offices addressing the areas of epidemiology, international health; and laboratory improvement.

As the group responsible for coordinating the provision of reference laboratory services to Federal, state and local health department laboratories, the Laboratory Improvement Program Office (LIOP) has been designated as the CDC ORTA. Its primary function is liaison between LIPO and the functional laboratory offices and staff as they conduct their individual technology transfer activities.

Achievements Reported

- During FY 1980 and FY 1981, CDC engaged in two related activities to be used by state and private laboratories and private industry. In the first effort, CDC developed sensitive and selective analytical methodologies for PBB's (polybaominated biphenyls) that were transferred to the Michigan Department of Public Health; subsequently, CDC developed simultaneous measurement of both PBB's and PCB's (polychlorinated biphenyls) and prepared, dispensed, assigned values and made available serum samples containing PCB's and commonly occurring chlorinated pesticides for use by state and private laboratories.

- In a related area, CDC investigators completed control technology assessments for industrial processes including primary aluminum, pesticide manufacturing and formulating, raw cotton processing, secondary nonferrous smelters, dry cleaning, tire manufacturing, spray painting and coating, and coal gasification and liquefaction. Altogether, 47 industry-wide studies concerned with occupational safety and health were conducted and 13 educational resources centers were supported.

- CDC also participated in cardiovascular intervention trails, assisted in the formation of standarized quality control reference materials, set up training clinics, and was responsible for operating 23 WHO collaborating centers.

Alcohol, Drug Abuse, and Mental Health Administration

The Alcohol, Drug Abuse, and Mental Health Administration (ADANHA) provides the Federal focus to increase knowledge and promote effective strategies to deal with health problems associated with the use and abuse of alcohol and drugs and with mental health and mental illness. The ADAMHA Office of the Administration (OA) is responsible for interpretation of requirements, policy guidance, and recommendations on improvements and augmentation of the knowledge transfer program and has been designated as an ORTA. Three full-time professionals are assigned to the ORTA functions.

ADAMHA has determined that each of its three institutes functions as a "laboratory" and so has designated an ORTA within each institute.

Achievements Reported

- Workshops on occupational alcoholism programs were conducted for labor and management in both public and private agencies and industries.

- In responding to an increasing number of requests, NIDA has developed effective treatment programs for specific populations with drug abuse problems; established school-based drug prevention programs; and distributed special information products.

- The National Institute of Mental Health responded to a state mental health program director who needed an appropriate patients rights program for the state. Based partly on an R&D project that developed and tested a model state program on the topic, NIMH consultants were able to help plan the program.

U. S. DEPARTMENT OF THE INTERIOR (DOI)

Two units within the Department of the Interior operate laboratories, as defined in the Stevenson-Wydler Technology Innovation Act of 1980. A summary follows of the technology transfer activities conducted by the Bureau of Mines and the Fish and Wildlife Service.

Bureau of Mines (BOM)

For several years, the Bureau of Mines has conducted a technology transfer program through the Branch of Technology Transfer (BTT) in the Office of Technical Information. With passage of the Stevenson-Wydler Technology Innovation Act, the BTT assumed the ORTA functions.

The BTT has a total of four professional and two clerical positions and an annual budget of $250,000 which is derived from assessments against authorized BOM programs. In addition, the BTT is assisted by the Technology Transfer Liaison Officers (TTLO) stationed at each of the Bureau's 10 Research Centers. Although technology transfer is a collateral duty for each TTLO, the costs (essentially for salary and occasional travel) are supported by the research centers.

Achievements Reported

- During FY 1981 and FY 1982, the BTT was responsible for the conduct of 14 seminars on 7 technology developments, 5 industry briefings, 4 workshops, 2 demonstrations, 12 exhibits and 74 issues of the Technology News. In cooperation with the Federal Laboratory Consortium, the BTT completed twenty-seven technology assessments describing specific research projects.

  As a result of the BTT's efforts, a number of research developments have been commercially adopted. They include technologies that have:

  - substantially lowered respirable dust concentrations in underground coal mines;
  - improved visibility for operators of large surface mine haulage equipment;
  - provided automatic systems for the suppression of mine fires;
  - helped control acid mine drainage; and
  - enabled minerals recycling and recovery plants to reclaim valuable minerals from wastes or from low-grade ores.

Fish and Wildlife Service

All research activities of the Fish and Wildlife Service are centrally managed by the Associate Director-Research. Although the Fish and Wildlife Service has not assigned any full-time personnel to the functions of an Office of Research and Technology Applications (ORTA), each R&D facility has a designated official whose functions also include responsibility for ORTA activities. In addition, an ORTA representative in Washington, D.C. was named as a national coordinator. During FY 1982 an estimated $3.3 million was spent on technology transfer efforts.

In FY 1983, the Fish and Wildlife Service anticipates a major reorganization merging Research, the Office of Extension Education and most of the Office of Biological Services into one R&D organization. As part of this merger an Office of Information Management will be established in Fort Collins, Colorado and will include an Office of Research and Technology Application.

Achievements Reported

- One of the most significant discoveries was the determination of the life cycle of an obscure organism known to cause whirling disease in salmonid fish. Enthusiastically received by state fisheries and state and private fish hatcheries, it is expected that cultural methods will be developed to control the organism, thereby resulting in measurable savings for fish producers.

- The Fish and Wildlife Service demonstrated that fat soybean meal can be used to replace nearly all fishmeal in pelletized fish food. The soybean substitute will result in cost reductions of approximately 15 percent for the manufacturers of prepared fish foods.

- In support of the 4-H fish and wildlife programs, the Fish and Wildlife Service has funded adult volunteer leader training programs and sponsored recognition certificates and awards to outstanding 4-H youths and leaders. The National Wildlife Health Laboratory provided diagnostic services on wildlife specimens for 16 state agencies, 5 universities and 6 zoos, and provided 300 consultations on wildlife health problems.

U. S. DEPARTMENT OF TRANSPORTATON (DOT)

The Department of Transportation manages nine laboratories engaged in R&D activities.

The responsibility for technology transfer rests within each of the operating DOT administrations. Office of Research and Technology Application (ORTA) contacts have been identified for each laboratory. Departmental oversight and coordination is provided by the Technology Sharing Program under the Assistant Secretary for Governmental Affairs within the Office of the Secretary.

The Federal Highway Administration (FHWA) technology transfer activities represent approximately $9.1 million in FY 1981 and $8.3 million in FY 1982. Within the Office of the Secretary, approximately $490,000 and $200,000 were expended on technology sharing efforts in FY 1981 and FY 1982 respectively. Although other operating administrations do not identify technology transfer as a separate budget item, DOT estimates that another $10 to 15 million is directed toward such activities.

Achievements Reported

- The FHWA has been very active in the area of transfer and commercialization of DOT research results. One activity has resulted in savings of over $8 million for the states. One example is the DOT work in the development of the dryer drum mixer for producing hot-mix asphalt. Now nearly all new hot-mix plants sold in the U.S. use this approach because of lower capital and operating costs.

- In another area, the Federal Railroad Administration (FRA) has contracted with the Association of American Railroads (AAR) for the "Care, Custody and Control" of the Transportation Test Center in Pueblo, Colorado. Thus, the FRA will provide the bulk of the funds while the AAR will do the actual testing for its own or member accounts.

- As a cooperative venture, the FHWA selected 10 state highway agencies to establish Technology Transfer Centers to assist local transportation agencies responsible for roads, bridges and public transportation. Working with a local university, the Center activities include quarterly newsletters, technical reports, seminars and training courses.

U. S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

The technology transfer program of the Environmental Protection Agency (EPA) seeks to transfer R&D outputs to Federal and state agencies and private industry. The program is coordinated by the Regional Services Staff, which is part of the research program management reporting to the Assistant Administrator for Research and Development. The Regional Services Staff will plan, broker and network the EPA functions required under Section 11 (c) (3) of the Stevenson-Wydler Technology Innovation Act. The individual laboratories are responsible for the functions specified in Section 11 (c) (2), information provision and dissemination; and 11 (c) (4), technical asssistance to state and local governments. In addition, the 10 Regional Offices of EPA interact directly with states, territories and possessions, and frequently transfer user needs to the appropriate laboratory and/or the Regional Services Staff.

EPA estimates that technology transfer expenditure for FY 1981 were $3 million and FY 1982 were $2.8 million. A breakdown of the EPA spending organizations is shown below.

	Budget ($K)	
Technology Transfer Function	1981	1982
Regional Services Staff (Executive Directorate, ORTA function)	$ 482.9	$ 391.3
Center for Environmental Research Information	1,093.7	1,092.4
Technical Information Product Management	706.8	657.3
Research Laboratories (Estimated)	716.6	700.0
	$3,000.0	$2,841.0

Achievements Reported

o Areas of particular interest during FY 1981 and FY 1982 included acid rain and hazardous waste disposal. EPA developed methodologies for defining susceptability of aquatic systems to acid rain impacts through cooperative research efforts with the States of Minnesota, Michigan and Wisconsin. Efforts to control hazardous waste using land treatment were initiated at the request of the Oklahoma State Health Department, and an innovative mobile incinerator has been provided to New Jersey for the disposal of polychlorinated biphenyls (PCB's) at a land-fill site.

- o In support of its efforts to develop the synfuels industry, EPA provided assistance to both states and private industry in the preparation of Environmental Impact Statements, permits, and environmental monitoring plans. A reference manual was developed for synfuel developers that describes streams and pollutants to be monitored and the frequency, cost and procedures for such monitoring.

- o EPA has established, by cooperative agreements, eight research centers at competitively selected universities. The focus of the center programs is generally on long-term (3-5 years or longer) research which links basic to applied research as related to EPA's mission.

- o A series of ten two-day Emerging Technology Seminars on wastewater control provided the 900 attendees with a rational basis for the consideration of new technologies during the planning and design of waste water treatment facilities.

Other reported achievements include:

- o Sodium conditioning to solve problems associated with hot side electrostatic precipitators for electric utilities;
- o Waste load allocation guidance document for toxic substances in a computer program for the State of Michigan;
- o Biological availability to fish of organics in municipal fly ash conducted cooperatively with Dow Chemical Company for use by industry and states;
- o Design and specification guidelines for low pressure sewer systems for the State of Florida; and
- o Treatment techniques for controlling trihalomethanes formed in drinking water for water utility managers.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)

The National Aeronautics and Space Administration (NASA) conducts no activities directly pursuant to the Stevenson-Wydler Technology Innovation Act, having exercised the waiver and election provided by Section 11(b) and 11(c)(4) of the Act. NASA does conduct a Technology Utilization program, begun in 1962, to enhance national economic growth and productivity through the transfer of new technology resulting from NASA research and development efforts to the nonaerospace segment of the economy.

Achievements Reported

o A safety net was required for personnel working on the Shuttle Orbiter. A sophisticated twisting process was invented which resulted in a supertwine that met the NASA specifications; a net of this twine can sustain a load of 800 pounds falling 25 feet.

  A firm is now manufacturing this net, which has proven attractive to fishing fleets. Japan has almost totally dominated this market, but the net could provide a foundation for American competition in the $500-600 million a year netting industry.

o To improve certain characteristics of composite materials, which are finding increased use in aircraft and other areospace systems, NASA developed an improved impregnating solution known as PMR-15. A company obtained the formula and the procedure for synthesizing PMR-15 and used it in developing new composite materials. These composites have a variety of applications, such as compressor blades for aircraft engines, radar domes, aircraft structures and other components requiring a material with high temperature resistance.

o A portable x-ray instrument developed by NASA and now being produced commercially may soon find further use as a medical system. The instrument is called Lixiscope--Low Intensity X-ray Imaging Scope--a self-contained, battery-powered fluoroscope that produces an instant image through use of a small amount of radioactive isotope. It is designed to use less than one percent of the radiation required by conventional x-ray devices.

  Lixiscope is being produced by a company which has an exclusive NASA license for one version of the device. It has received Food and Drug Administration approval to begin

testing the device for medical applications. Lixiscope's small size and low radiation dosage make it attractive in medical applications, such as emergency room examination of small children.

- A flat conductor cable is being highly praised as the best cost-saving office support system ever developed. Flat conductor cable was developed of necessity as aircraft and spacecraft became increasingly complex. NASA recognized that the cable offered a benefit in design of electrification systems for commercial buildings and undertook its promotion.

- A NASA-developed stress monitor was designed to provide highly precise stress measurement in industrial applications--such as pressure vessels and power plants--where overtighthened or undertightened bolts can fail and cause accidents or costly equipment shutdowns. The monitor is licensed to 12 companies.

- NASA wanted a system for monitoring two different propellants being supplied to a spacecraft rocket thruster. A positive displacement measuring device had to be developed that would not miss any of the propellant flow. The technology thus developed provided a basis for later design of an extremely precise low-flow calibration system now being marketed worldwide.

NATIONAL SCIENCE FOUNDATION (NSF)

The National Science Foundation (NSF) operates only one research center, the National Center for Atmospheric Research (NCAR), which is of sufficient size to require an Office of Research and Technology Applications (ORTA). Because of the special and limited focus and management structure of NCAR, NSF requested a waiver from the ORTA requirement of the Stevenson-Wydler Technology Innovation Act (P.L. 96-480) in March 1982. In lieu thereof, the NSF has implemented a team approach whereby the professional research staff at NCAR support research and technology applications as needed.

In addition, the NSF performs a variety of activities that are concerned with research and technology application. NSF efforts directed toward the objectives of P.L. 96-480 include six national centers for research and eight programs devoted in whole or in part to the transfer and use of science and technology by the private sector and state and local governments.

Each of the Centers has an individual identified as the ORTA contact. Although NSF has not published any regulations or directives to implement P.L. 96-480, it has identified the percentage of employee time and percentage of budget at each center dedicated to research and technology applications. Averaging the six centers, in FY 1981 1.2 percent of employee time and 1.7 percent of budget was expended on such functions. In FY 1982, research and technology applications accounted for 1.4. percent of employee time and 1.8 percent of budget.

Achievements Reported

- The Air Quality Management Study, developed by NCAR, is being used by Federal and State Governments to develop a methodology for assessing the performance of air quality models. The Study includes work on methods for improving statistical analysis of ambient pollutant data and visibility research.

- The Small Business Innovation Research Program made awards to Collaborative Research, Inc. of Lexington, Massachusetts in 1977 and 1978. Announcement of the awards led the Dow Chemical Corporation to contract more than $11 million to that firm in research and investment. The firm's expansion with NSF and Dow funds led to a 1982 public offering which provided an additional $13.5 million. Today, Collaborative Research, Inc. is a well known producer of interferon and related products.

- The Massachusetts Institute of Technology's Polymer Processing Center, an Industry/University Cooperative Research Center, worked with one of the member companies, Martin Marietta, to develop a new time- and cost-saving molding process for the super-lightweight ablator coating used on the external fuel tank of NASA's space shuttle. In conjunction with a gas injection technique, also developed by Martin Marietta, the process is expected to save over $100,000 per launch for an estimated saving of $10 million over the next ten years.

- An Industry/University Cooperative Research Project has linked a faculty member at the Illinois Institute of Technology with an industrial scientist at Bell laboratories to develop an infrared intracavity spectrometer. They are using the spectrometer to study vapor deposition reactions which are important in the manufacture of solid electronics, solar cells and optical fibers for telecommunications.

S. 1250

U.S.C. X3

P.L. 96-480

Ninety-sixth Congress of the United States of America

AT THE SECOND SESSION

Begun and held at the City of Washington on Thursday, the third day of January, one thousand nine hundred and eighty

An Act

To promote United States technological innovation for the achievement of national economic, environmental, and social goals, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Stevenson-Wydler Technology Innovation Act of 1980".

SEC. 2. FINDINGS.

The Congress finds and declares that:

(1) Technology and industrial innovation are central to the economic, environmental, and social well-being of citizens of the United States.

(2) Technology and industrial innovation offer an improved standard of living, increased public and private sector productivity, creation of new industries and employment opportunities, improved public services and enhanced competitiveness of United States products in world markets.

(3) Many new discoveries and advances in science occur in universities and Federal laboratories, while the application of this new knowledge to commercial and useful public purposes depends largely upon actions by business and labor. Cooperation among academia, Federal laboratories, labor, and industry, in such forms as technology transfer, personnel exchange, joint research projects, and others, should be renewed, expanded, and strengthened.

(4) Small businesses have performed an important role in advancing industrial and technological innovation.

(5) Industrial and technological innovation in the United States may be lagging when compared to historical patterns and other industrialized nations.

(6) Increased industrial and technological innovation would reduce trade deficits, stabilize the dollar, increase productivity gains, increase employment, and stabilize prices.

(7) Government antitrust, economic, trade, patent, procurement, regulatory, research and development, and tax policies have significant impacts upon industrial innovation and development of technology, but there is insufficient knowledge of their effects in particular sectors of the economy.

(8) No comprehensive national policy exists to enhance technological innovation for commercial and public purposes. There is a need for such a policy, including a strong national policy supporting domestic technology transfer and utilization of the science and technology resources of the Federal Government.

(9) It is in the national interest to promote the adaptation of technological innovations to State and local government uses. Technological innovations can improve services, reduce their costs, and increase productivity in State and local governments.

(10) The Federal laboratories and other performers of federally funded research and development frequently provide scientific

and technological developments of potential use to State and local governments and private industry. These developments should be made accessible to those governments and industry. There is a need to provide means of access and to give adequate personnel and funding support to these means.

(11) The Nation should give fuller recognition to individuals and companies which have made outstanding contributions to the promotion of technology or technological manpower for the improvement of the economic, environmental, or social well-being of the United States.

SEC. 3. PURPOSE.

It is the purpose of this Act to improve the economic, environmental, and social well-being of the United States by—

(1) establishing organizations in the executive branch to study and stimulate technology;

(2) promoting technology development through the establishment of centers for industrial technology;

(3) stimulating improved utilization of federally funded technology developments by State and local governments and the private sector;

(4) providing encouragement for the development of technology through the recognition of individuals and companies which have made outstanding contributions in technology; and

(5) encouraging the exchange of scientific and technical personnel among academia, industry, and Federal laboratories.

SEC. 4. DEFINITIONS.

As used in this Act, unless the context otherwise requires, the term—

(1) "Office" means the Office of Industrial Technology established under section 5 of this Act.

(2) "Secretary" means the Secretary of Commerce.

(3) "Director" means the Director of the Office of Industrial Technology, appointed pursuant to section 5 of this Act.

(4) "Centers" means the Centers for Industrial Technology established under section 6 or section 8 of this Act.

(5) "Nonprofit institution" means an organization owned and operated exclusively for scientific or educational purposes, no part of the net earnings of which inures to the benefit of any private shareholder or individual.

(6) "Board" means the National Industrial Technology Board established pursuant to section 10.

(7) "Federal laboratory" means any laboratory, any federally funded research and development center, or any center established under section 6 or section 8 of this Act that is owned and funded by the Federal Government, whether operated by the Government or by a contractor.

(8) "Supporting agency" means either the Department of Commerce or the National Science Foundation, as appropriate.

SEC. 5. COMMERCE AND TECHNOLOGICAL INNOVATION.

(a) In General.—The Secretary shall establish and maintain an Office of Industrial Technology in accordance with the provisions, findings, and purposes of this Act.

(b) Director.—The President shall appoint, by and with the advice and consent of the Senate, a Director of the Office, who shall be

compensated at the rate provided for level V of the Executive Schedule in section 5316 of title 5, United States Code.

(c) DUTIES.—The Secretary, through the Director, on a continuing basis, shall—

(1) determine the relationships of technological developments and international technology transfers to the output, employment, productivity, and world trade performance of United States and foreign industrial sectors;

(2) determine the influence of economic, labor and other conditions, industrial structure and management, and government policies on technological developments in particular industrial sectors worldwide;

(3) identify technological needs, problems, and opportunities within and across industrial sectors that, if addressed, could make a significant contribution to the economy of the United States;

(4) assess whether the capital, technical and other resources being allocated to domestic industrial sectors which are likely to generate new technologies are adequate to meet private and social demands for goods and services and to promote productivity and economic growth;

(5) propose and support studies and policy experiments, in cooperation with other Federal agencies, to determine the effectiveness of measures with the potential of advancing United States technological innovation;

(6) provide that cooperative efforts to stimulate industrial innovation be undertaken between the Director and other officials in the Department of Commerce responsible for such areas as trade and economic assistance;

(7) consider government measures with the potential of advancing United States technological innovation and exploiting innovations of foreign origin; and

(8) publish the results of studies and policy experiments.

(d) REPORT.—The Secretary shall prepare and submit to the President and Congress, within 3 years after the date of enactment of this Act, a report on the progress, findings, and conclusions of activities conducted pursuant to sections 5, 6, 8, 11, 12, and 13 of this Act and recommendations for possible modifications thereof.

SEC. 6. CENTERS FOR INDUSTRIAL TECHNOLOGY.

(a) ESTABLISHMENT.—The Secretary shall provide assistance for the establishment of Centers for Industrial Technology. Such Centers shall be affiliated with any university, or other nonprofit institution, or group thereof, that applies for and is awarded a grant or enters into a cooperative agreement under this section. The objective of the Centers is to enhance technological innovation through—

(1) the participation of individuals from industry and universities in cooperative technological innovation activities;

(2) the development of the generic research base, important for technological advance and innovative activity, in which individual firms have little incentive to invest, but which may have significant economic or strategic importance, such as manufacturing technology;

(3) the education and training of individuals in the technological innovation process;

(4) the improvement of mechanisms for the dissemination of scientific, engineering, and technical information among universities and industry;

(5) the utilization of the capability and expertise, where appropriate, that exists in Federal laboratories; and

(6) the development of continuing financial support from other mission agencies, from State and local government, and from industry and universities through, among other means, fees, licenses, and royalties.

(b) ACTIVITIES.—The activities of the Centers shall include, but need not be limited to—

(1) research supportive of technological and industrial innovation including cooperative industry-university basic and applied research;

(2) assistance to individuals and small businesses in the generation, evaluation and development of technological ideas supportive of industrial innovation and new business ventures;

(3) technical assistance and advisory services to industry, particularly small businesses; and

(4) curriculum development, training, and instruction in invention, entrepreneurship, and industrial innovation.

Each Center need not undertake all of the activities under this subsection.

(c) REQUIREMENTS.—Prior to establishing a Center, the Secretary shall find that—

(1) consideration has been given to the potential contribution of the activities proposed under the Center to productivity, employment, and economic competitiveness of the United States;

(2) a high likelihood exists of continuing participation, advice, financial support, and other contributions from the private sector;

(3) the host university or other nonprofit institution has a plan for the management and evaluation of the activities proposed within the particular Center, including:

(A) the agreement between the parties as to the allocation of patent rights on a nonexclusive, partially exclusive, or exclusive license basis to and inventions conceived or made under the auspices of the Center; and

(B) the consideration of means to place the Center, to the maximum extent feasible, on a self-sustaining basis;

(4) suitable consideration has been given to the university's or other nonprofit institution's capabilities and geographical location; and

(5) consideration has been given to any effects upon competition of the activities proposed under the Center.

(d) PLANNING GRANTS.—The Secretary is authorized to make available nonrenewable planning grants to universities or nonprofit institutions for the purpose of developing a plan required under subsection (c)(3).

(e) RESEARCH AND DEVELOPMENT UTILIZATION.—(1) To promote technological innovation and commercialization of research and development efforts, each Center has the option of acquiring title to any invention conceived or made under the auspices of the Center that was supported at least in part by Federal funds: *Provided*, That—

(A) the Center reports the invention to the supporting agency together with a list of each country in which the Center elects to file a patent application on the invention;

(B) said option shall be exercised at the time of disclosure of invention or within such time thereafter as may be provided in the grant or cooperative agreement;

(C) the Center intends to promote the commercialization of the invention and file a United States patent application;

(D) royalties be used for compensation of the inventor or for educational or research activities of the Center;

(E) the Center make periodic reports to the supporting agency, and the supporting agency may treat information contained in such reports as privileged and confidential technical, commercial, and financial information and not subject to disclosures under the Freedom of Information Act; and

(F) any Federal department or agency shall have the royalty-free right to practice, or have practiced on its behalf, the invention for governmental purposes.

The supporting agency shall have the right to acquire title to any patent on an invention in any country in which the Center elects not to file a patent application or fails to file within a reasonable time.

(2) Where a Center has retained title to an invention under paragraph (1) of this subsection the supporting agency shall have the right to require the Center or its licensee to grant a nonexclusive, partially exclusive, or exclusive license to a responsible applicant or applicants, upon terms that are reasonable under the circumstances, if the supporting agency determines, after public notice and opportunity for hearing, that such action is necessary—

(A) because the Center or licensee has not taken and is not expected to take timely and effective action to achieve practical application of the invention;

(B) to meet health, safety, environmental, or national security needs which are not reasonably satisfied by the contractor or licensee; or

(C) because the granting of exclusive rights in the invention has tended substantially to lessen competition or to result in undue market concentration in the United States in any line of commerce to which the technology relates.

(3) Any individual, partnership, corporation, association, institution, or other entity adversely affected by a supporting agency determination made under paragraph (2) of this subsection may, at any time within 60 days after the determination is issued, file a petition to the United States Court of Claims which shall have jurisdiction to determine that matter de novo and to affirm, reverse, or modify as appropriate, the determination of the supporting agency.

(f) ADDITIONAL CONSIDERATION.—The supporting agency may request the Attorney General's opinion whether the proposed joint research activities of a Center would violate any of the antitrust laws. The Attorney General shall advise the supporting agency of his determination and the reasons for it within 120 days after receipt of such request.

SEC. 7. GRANTS AND COOPERATIVE AGREEMENTS.

(a) IN GENERAL.—The Secretary may make grants and enter into cooperative agreements according to the provisions of this section in order to assist any activity consistent with this Act, including activities performed by individuals. The total amount of any such grant or cooperative agreement may not exceed 75 percent of the total cost of the program.

(b) ELIGIBILITY AND PROCEDURE.—Any person or institution may apply to the Secretary for a grant or cooperative agreement available under this section. Application shall be made in such form and manner, and with such content and other submissions, as the Direc-

tor shall prescribe. The Secretary shall act upon each such application within 90 days after the date on which all required information is received.

(c) TERMS AND CONDITIONS.—

(1) Any grant made, or cooperative agreement entered into, under this section shall be subject to the limitations and provisions set forth in paragraph (2) of this subsection, and to such other terms, conditions, and requirements as the Secretary deems necessary or appropriate.

(2) Any person who receives or utilizes any proceeds of any grant made or cooperative agreement entered into under this section shall keep such records as the Secretary shall by regulation prescribe as being necessary and appropriate to facilitate effective audit and evaluation, including records which fully disclose the amount and disposition by such recipient of such proceeds, the total cost of the program or project in connection with which such proceeds were used, and the amount, if any, of such costs which was provided through other sources.

SEC. 8. NATIONAL SCIENCE FOUNDATION CENTERS FOR INDUSTRIAL TECHNOLOGY.

(a) ESTABLISHMENT AND PROVISIONS.—The National Science Foundation shall provide assistance for the establishment of Centers for Industrial Technology. Such Centers shall be affiliated with a university, or other nonprofit institution, or a group thereof. The objective of the Centers is to enhance technological innovation as provided in section 6(a) through the conduct of activities as provided in section 6(b). The provisions of sections 6(e) and 6(f) shall apply to Centers established under this section.

(b) PLANNING GRANTS.—The National Science Foundation is authorized to make available nonrenewable planning grants to universities or nonprofit institutions for the purpose of developing the plan, as described under section 6(c)(3).

(c) TERMS AND CONDITIONS.—Grants, contracts, and cooperative agreements entered into by the National Science Foundation in execution of the powers and duties of the National Science Foundation under this Act shall be governed by the National Science Foundation Act of 1950 and other pertinent Acts.

SEC. 9. ADMINISTRATIVE ARRANGEMENTS.

(a) COORDINATION.—The Secretary and the National Science Foundation shall, on a continuing basis, obtain the advice and cooperation of departments and agencies whose missions contribute to or are affected by the programs established under this Act, including the development of an agenda for research and policy experimentation. These departments and agencies shall include but not be limited to the Departments of Defense, Energy, Education, Health and Human Services, Housing and Urban Development, the Environmental Protection Agency, National Aeronautics and Space Administration, Small Business Administration, Council of Economic Advisers, Council on Environmental Quality, and Office of Science and Technology Policy.

(b) COOPERATION.—It is the sense of the Congress that departments and agencies, including the Federal laboratories, whose missions are affected by, or could contribute to, the programs established under this Act, should, within the limits of budgetary authorizations and appropriations, support or participate in activities or projects authorized by this Act.

(c) ADMINISTRATIVE AUTHORIZATION.—

(1) Departments and agencies described in subsection (b) are authorized to participate in, contribute to, and serve as resources for the Centers and for any other activities authorized under this Act.

(2) The Secretary and the National Science Foundation are authorized to receive moneys and to receive other forms of assistance from other departments or agencies to support activities of the Centers and any other activities authorized under this Act.

(d) COOPERATIVE EFFORTS.—The Secretary and the National Science Foundation shall, on a continuing basis, provide each other the opportunity to comment on any proposed program of activity under section 6, 8, or 13 of this Act before funds are committed to such program in order to mount complementary efforts and avoid duplication.

SEC. 10. NATIONAL INDUSTRIAL TECHNOLOGY BOARD.

(a) ESTABLISHMENT.—There shall be established a committee to be known as the National Industrial Technology Board.

(b) DUTIES.—The Board shall take such steps as may be necessary to review annually the activities of the Office and advise the Secretary and the Director with respect to—

(1) the formulation and conduct of activities under section 5 of this title;

(2) the designation and operation of Centers and their programs under section 6 of this Act including assistance in establishing priorities;

(3) the preparation of the report required under section 5(d); and

(4) such other matters as the Secretary or Director refers to the Board, including the establishment of Centers under section 8 of this Act, for review and advice.

The Director shall make available to the Board such information, personnel, and administrative services and assistance as it may reasonably require to carry out its duties. The National Science Foundation shall make available to the Board such information and assistance as it may reasonably require to carry out its duties.

(c) MEMBERSHIP, TERMS, AND POWERS.—

(1) The Board shall consist of 15 voting members who shall be appointed by the Secretary. The Director shall serve as a nonvoting member of the Board. The members of the Board shall be individuals who, by reason of knowledge, experience, or training are especially qualified in one or more of the disciplines and fields dealing with technology, labor, and industrial innovation or who are affected by technological innovation. The majority of the members of the Board shall be individuals from industry and business.

(2) The term of office of a voting member of the Board shall be 3 years, except that of the original appointees, five shall be appointed for a term of 1 year, five shall be appointed for a term of 2 years, and five shall be appointed for a term of 3 years.

(3) Any individual appointed to fill a vacancy occurring before the expiration of the term for which his or her predecessor was appointed shall be appointed only for the remainder of such term. No individual may be appointed as a voting member after serving more than two full terms as such a member.

(4) The Board shall select a voting member to serve as the Chairperson and another voting member to serve as the Vice Chairperson. The Vice Chairperson shall perform the functions of the Chairperson in the absence or incapacity of the Chairperson.

(5) Voting members of the Board may receive compensation at a daily rate for GS-18 of the General Schedule under section 5332 of title 5, United States Code, when actually engaged in the performance of duties for such Board, and may be reimbursed for actual and reasonable expenses incurred in the performance of such duties.

SEC. 11. UTILIZATION OF FEDERAL TECHNOLOGY.

(a) POLICY.—It is the continuing responsibility of the Federal Government to ensure the full use of the results of the Nation's Federal investment in research and development. To this end the Federal Government shall strive where appropriate to transfer federally owned or originated technology to State and local governments and to the private sector.

(b) ESTABLISHMENT OF RESEARCH AND TECHNOLOGY APPLICATIONS OFFICES.—Each Federal laboratory shall establish an Office of Research and Technology Applications. Laboratories having existing organizational structures which perform the functions of this section may elect to combine the Office of Research and Technology Applications within the existing organization. The staffing and funding levels for these offices shall be determined between each Federal laboratory and the Federal agency operating or directing the laboratory, except that (1) each laboratory having a total annual budget exceeding $20,000,000 shall provide at least one professional individual full-time as staff for its Office of Research and Technology Applications, and (2) after September 30, 1981, each Federal agency which operates or directs one or more Federal laboratories shall make available not less than 0.5 percent of the agency's research and development budget to support the technology transfer function at the agency and at its laboratories, including support of the Offices of Research and Technology Applications. The agency head may waive the requirements set forth in (1) and/or (2) of this subsection. If the agency head waives either requirement (1) or (2), the agency head shall submit to Congress at the time the President submits the budget to Congress an explanation of the reasons for the waiver and alternate plans for conducting the technology transfer function at the agency.

(c) FUNCTIONS OF RESEARCH AND TECHNOLOGY APPLICATIONS OFFICES.—It shall be the function of each Office of Research and Technology Applications—

(1) to prepare an application assessment of each research and development project in which that laboratory is engaged which has potential for successful application in State or local government or in private industry;

(2) to provide and disseminate information on federally owned or originated products, processes, and services having potential application to State and local governments and to private industry;

(3) to cooperate with and assist the Center for the Utilization of Federal Technology and other organizations which link the research and development resources of that laboratory and the Federal Government as a whole to potential users in State and local government and private industry; and

(4) to provide technical assistance in response to requests from State and local government officials.

Agencies which have established organizational structures outside their Federal laboratories which have as their principal purpose the transfer of federally owned or originated technology to State and local government and to the private sector may elect to perform the functions of this subsection in such organizational structures. No Office of Research and Technology Applications or other organizational structures performing the functions of this subsection shall substantially compete with similar services available in the private sector.

(d) CENTER FOR THE UTILIZATION OF FEDERAL TECHNOLOGY.—There is hereby established in the Department of Commerce a Center for the Utilization of Federal Technology. The Center for the Utilization of Federal Technology shall—

(1) serve as a central clearinghouse for the collection, dissemination and transfer of information on federally owned or originated technologies having potential application to State and local governments and to private industry;

(2) coordinate the activities of the Offices of Research and Technology Applications of the Federal laboratories;

(3) utilize the expertise and services of the National Science Foundation and the existing Federal Laboratory Consortium for Technology Transfer; particularly in dealing with State and local governments;

(4) receive requests for technical assistance from State and local governments and refer these requests to the appropriate Federal laboratories;

(5) provide funding, at the discretion of the Secretary, for Federal laboratories to provide the assistance specified in subsection (c)(4); and

(6) use appropriate technology transfer mechanisms such as personnel exchanges and computer-based systems.

(e) AGENCY REPORTING.—Each Federal agency which operates or directs one or more Federal laboratories shall prepare biennially a report summarizing the activities performed by that agency and its Federal laboratories pursuant to the provisions of this section. The report shall be transmitted to the Center for the Utilization of Federal Technology by November 1 of each year in which it is due.

SEC. 12. NATIONAL TECHNOLOGY MEDAL.

(a) ESTABLISHMENT.—There is hereby established a National Technology Medal, which shall be of such design and materials and bear such inscriptions as the President, on the basis of recommendations submitted by the Office of Science and Technology Policy, may prescribe.

(b) AWARD.—The President shall periodically award the medal, on the basis of recommendations received from the Secretary or on the basis of such other information and evidence as he deems appropriate, to individuals or companies, which in his judgment are deserving of special recognition by reason of their outstanding contributions to the promotion of technology or technological manpower for the improvement of the economic, environmental, or social well-being of the United States.

(c) PRESENTATION.—The presentation of the award shall be made by the President with such ceremonies as he may deem proper.

SEC. 13. PERSONNEL EXCHANGES.

The Secretary and the National Science Foundation, jointly, shall establish a program to foster the exchange of scientific and technical personnel among academia, industry, and Federal laboratories. Such program shall include both (1) federally supported exchanges and (2) efforts to stimulate exchanges without Federal funding.

SEC. 14. AUTHORIZATION OF APPROPRIATIONS.

(a) There is authorized to be appropriated to the Secretary for purposes of carrying out section 6, not to exceed $19,000,000 for the fiscal year ending September 30, 1981, $40,000,000 for the fiscal year ending September 30, 1982, $50,000,000 for the fiscal year ending September 30, 1983, and $60,000,000 for each of the fiscal years ending September 30, 1984, and 1985.

(b) In addition to authorizations of appropriations under subsection (a), there is authorized to be appropriated to the Secretary for purposes of carrying out the provisions of this Act, not to exceed $5,000,000 for the fiscal year ending September 30, 1981, $9,000,000 for the fiscal year ending September 30, 1982, and $14,000,000 for each of the fiscal years ending September 30, 1983, 1984, and 1985.

(c) Such sums as may be appropriated under subsections (a) and (b) shall remain available until expended.

(d) To enable the National Science Foundation to carry out its powers and duties under this Act only such sums may be appropriated as the Congress may authorize by law.

SEC. 15. SPENDING AUTHORITY.

No payments shall be made or contracts shall be entered into pursuant to this Act except to such extent or in such amounts as are provided in advance in appropriation Acts.

Speaker of the House of Representatives.

Vice President of the United States and
President of the Senate.

Nov. 85

PROPOSED TECHNOLOGY TRANSFER ACT OF 1985

Cooperative R&D Agreements:

It authorizes Federal agencies to delegate certain authorities to their government-operated laboratories. These authorities include entering into cooperative agreements with public and private sector organizations (including other Federal agencies), including patent licenses. Under these agreements, the laboratories and their collaborators may share resources and work on projects of mutual interest. The cooperative agreements may include advance determinations of the ownership of patents that arise under these cooperative arrangements.

The agencies that choose to exercise this delegation are instructed to prepare specific implementation plans. If these plans include a case-by-case review of the agreements negotiated by the laboratories, then a limited review period is expected. Special consideration is to be given to small businesses and businesses that will use the subject technology for manufacture in the U.S. Employee standards of conduct are to be developed.

Cooperative agreements include programs that will entail use of federal personnel, facilities, services, equipment or other resources.

Establishment of Federal Laboratory Consortium for Technology Transfer:

The Consortium is established within the NSF with these functions:

- Develop programs to increase the awareness of Federal lab employees on the commercial value of lab technology.
- Furnish advice and assistance to labs and agencies in their transfer programs ("including the planning of seminars for small business and other industry").
- Provide a clearinghouse for technical requests from state and local governments, businesses, industrial development organizations, nonprofits (including universities), federal agencies and laboratories. Refer those requests to NTIS, if there is published information adequate for the response; otherwise, refer them to the appropriate federal organization.
- Facilitate cooperation among the ORTAs.
- Use the expertise of NSF, the Department of Commerce and NASA.
- Assist labs in developing transfer mechanisms such as personnel exchanges, computer-based systems, and technical volunteer services.
- Facilitate cooperation between ORTAs and technology transfer organizations on a regional, state or local basis.

Membership in the Consortium includes the labs required to have full-time transfer personnel and any other labs who choose to join. Each member lab and agency appoints an individual representative to the Consortium.

Some details: The NSF may provide office space, etc., to the Consortium on a reimbursable basis. The Consortium provides annual expenditure reports to the President, and cognizant Congressional Committees and federal agencies. Those agencies whose laboratories spend at least $200 million in-house each year are

required to pay an amount equal to .005% of these laboratory expenditures for operation of the FLC. This "setaside" is in force for FY-87-91; the funds may be taken from any source in the agency's budget. (Based on FY-86 budgets, it is estimated that this will provide $900K per year) The agencies and labs are authorized to provide additional support.

Utilization of Federal Technology:

Consistent with mission requirements, technology transfer is made a responsibility of each science and engineering professional in a federal lab. Transfer activities are to be considered positively in promotions, evaluations, etc.

The Stevenson-Wydler Act, Section II, is modified in three ways:

- Each lab with "200 or more full-time scientific, engineering and related technical positions" is required to have at least one full-time equivalent technology transfer position.
- The applications assessment requirement is modified to permit the laboratory to determine which projects should be assessed.
- References to the Center for Utilization of Federal Technology are changed to the NTIS. Requests that require more than existing published information are to be referred to the Consortium.

Agency Reporting:

In place of the Stevenson-Wydler Act's requirement for a biennial report from each agency to the Department of Commerce, this bill requires an annual report as part of the agency's annual budget submission to Congress.

Functions of the Secretary of Commerce:

That Department may provide to interested agencies: expertise in determining the commercial potential for technology and options for commercialization; model provisions for cooperative agreements; and advice on cooperative programs.

Rewards for Scientific, Engineering and Technical Personnel of Federal Agencies:

Agencies with R&D budgets in their government-operated labs of at least $50 million per year are to establish a cash awards program for these personnel for: innovations with commercial applications or with mission value; and exemplary impacts on technology transfer results.

Distribution of Royalties:

Up to certain limits, the agencies will retain patent licensing royalties. The limit is 5% of the labs' operating budget plus 25% of the excess above 5%. The majority of these funds are to be returned to the originating laboratories for several purposes: to pay expenses incurred in patent licensing and administration; to reward employees (as noted above) with payments that are clearly in addition to all regular pay and other awards; to further scientific exchanges; for mission-related R&D, education and training; and for activities that increase the licensing potential of laboratory technologies. Summaries of royalty receipts and disbursements are to be provided in each agency's annual budget submission.

APPENDIX B

FLC VIEWGRAPHS AND ANNUAL BROCHURES

THE STEVENSON-WYDLER TECHNOLOGY INNOVATION ACT OF 1980

PUBLIC LAW 96-480

THE FEDERAL LABORATORIES

AND THE

FEDERAL LABORATORY CONSORTIUM for TECHNOLOGY TRANSFER

PL 96-480

ESTABLISHES FEDERAL GOVERNMENT POLICY:

It is the RESPONSIBILITY of the Federal Government to:

* ENSURE FULL USE OF OUR NATION'S RESEARCH & DEVELOPMENT INVESTMENT!

SUMMARY REQUIREMENTS

PL 96-480

EACH FEDERAL LABORATORY WILL:

- MAKE TECHNOLOGY TRANSFER PART OF THE LABORATORY MISSION.
- ESTABLISH A RESEARCH & TECHNOLOGY APPLICATIONS OFFICE.
- ASSESS LABORATORY RESEARCH AND DEVELOPMENT PROJECTS.
- DISSEMINATE INFORMATION ON PRODUCTS, PROCESSES AND SERVICES.
- COOPERATE WITH CUFT AND OTHER T^2 ORGANIZATIONS.
- PROVIDE TECHNICAL ASSISTANCE UPON REQUEST.

RESEARCH & TECHNOLOGY APPLICATIONS OFFICE

PL 96-480

- EACH FEDERAL LABORATORY MUST HAVE ONE;
- AN EXISTING ORGANIZATION MAY BE DESIGNATED;
- AN ACTIVE OUTREACH PROGRAM IS REQUIRED TO MAKE POTENTIAL USERS AWARE OF THE OFFICE;
- AT LEAST ONE FULL-TIME PROFESSIONAL STAFF (IF LAB R&D BUDGET OVER $20M);
- SPECIFIC FUNDING AND STAFFING IS THE JOINT RESPONSIBILITY OF THE AGENCY AND THE INDIVILUAL LABORATORIES.

APPLICATION ASSESSMENTS

PL 96-480

- "APPLICATIONS ASSESSMENT" REQUIRED FOR EVERY R&D PROJECT DETERMINED TO HAVE POTENTIAL FOR SUCCESSFUL APPLICATION.
- RESEARCH AND TECHNOLOGY APPLICATIONS OFFICE DETERMINES WHEN, HOW AND FOR WHICH PROJECT ASSESSMENTS ARE NEEDED.

DISSEMINATION

PL 96-480

- LABORATORY IS "TO PROVIDE AND DISSEMINATE INFORMATION ON FEDERALLY OWNED AND ORIGINATED PRODUCTS, PROCESSES, AND SERVICES HAVING POTENTIAL APPLICATION TO STATE AND LOCAL GOVERNMENTS AND TO PRIVATE INDUSTRY."
- AN ACTIVE OUTREACH PROGRAM IS REQUIRED.
- INTENT IS TO DO MORE THAN MAKE INFORMATION AVAILABLE.

COOPERATE WITH OTHER AGENCIES

PL 96-480

- EACH LAB DIRECTED TO COOPERATE WITH AND ASSIST THE NEW CENTER FOR UTILIZATION OF FEDERAL TECHNOLOGY (CUFT) ESTABLISHED BY DOC, AND WITH NSF AND FLC.

- INTENT IS TO USE ESTABLISHED NETWORKS (SUCH AS THE FLC) TO FACILITATE TRANSFER.

TECHNICAL ASSISTANCE

PL 96-480

- ASSISTANCE IS FOR STATE AND LOCAL GOVERNMENTS AND THE PRIVATE SECTOR WHEN APPROPRIATE.
- RECOGNITION THAT MORE THAN INFORMATION DISSEMINATION IS REQUIRED.
- LABORATORIES HAVE FLEXIBILITY IN PROCESSING REQUESTS.

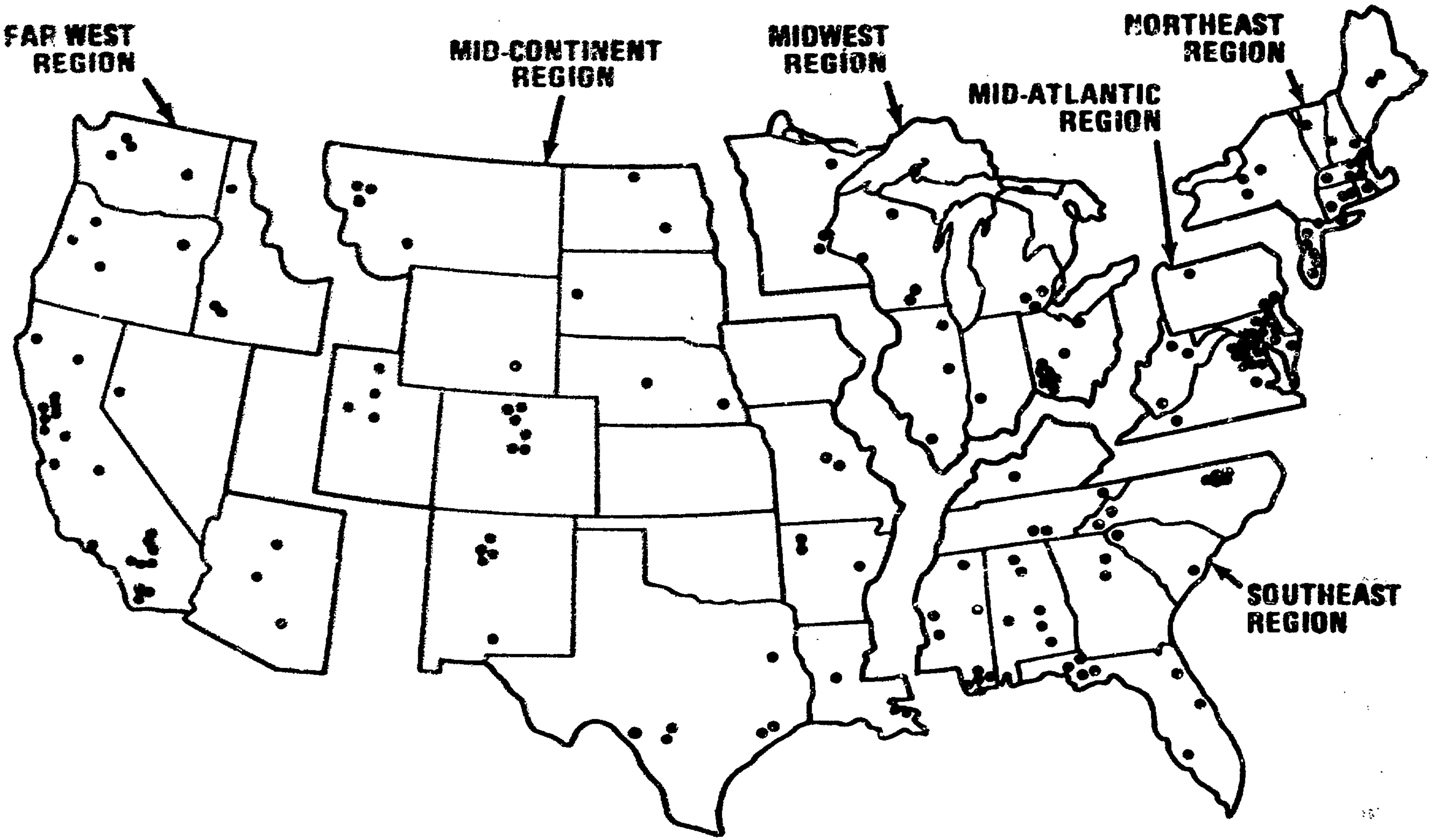
BACKGROUND 1974-1981

PL 96-480

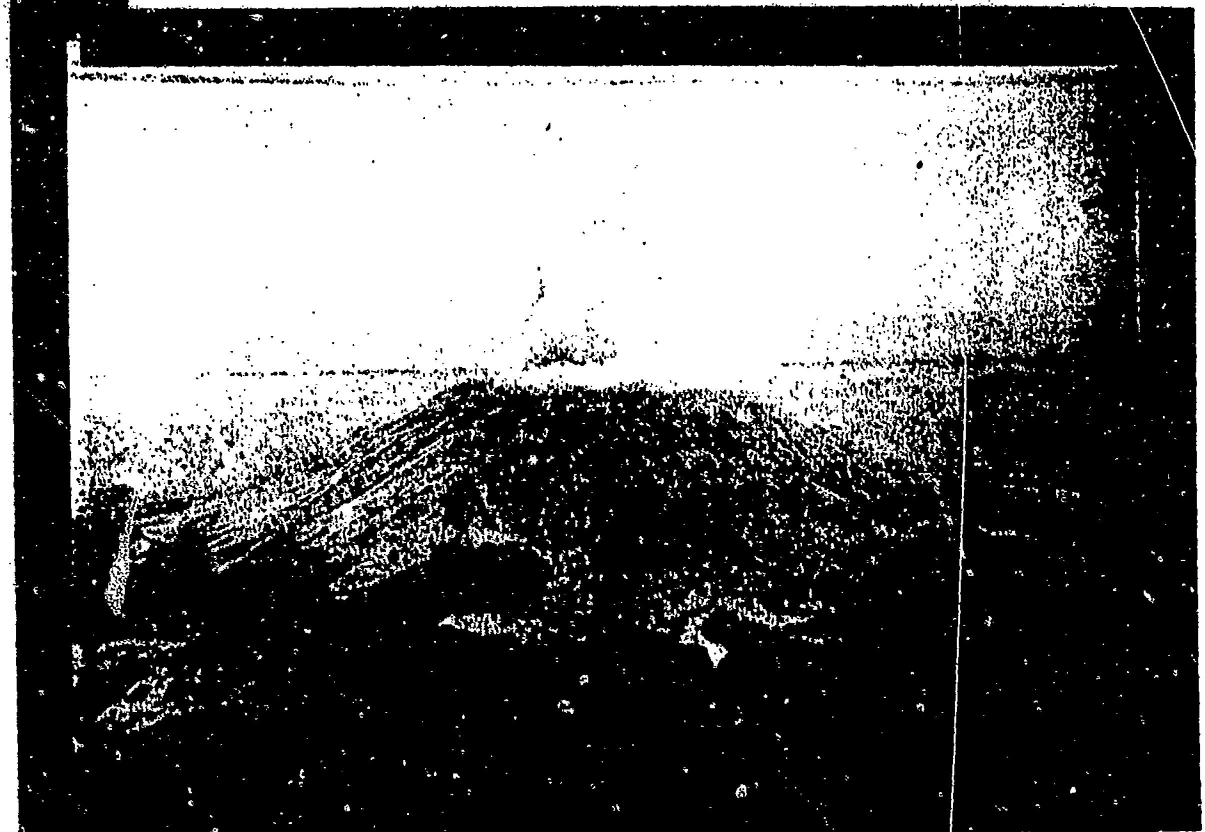
THE FEDERAL LABORATORY CONSORTIUM FOR TECHNOLOGY TRANSFER

- ORGANIZED INTO 6 REGIONS
- REPRESENTS 11 FEDERAL AGENCIES
- MEMBERSHIP OF 200

FEDERAL LABORATORY CONSORTIUM



1982



MT. ST. HELENS
May 18, 1980 Eruption
Photo: U.S. Geological Survey
See page 15 for story

FEDERAL LABORATORY CONSORTIUM FOR TECHNOLOGY TRANSFER ▶ OUR STORY

"It is the continuing responsibility of the Federal Government to ensure the full use of the results of the Nation's Federal Investment in research and development. To this end the Federal Government shall strive where appropriate to transfer federally owned or originated technology to State and Local governments and to the private sector."

This statement of policy contained in the Stevenson-Wydler Technology Innovation Act of 1980 (Public Law 96-480) typifies the decade-long evolution of the Federal Laboratory Consortium (FLC). As our name implies, we are an organization dedicated to technology transfer and innovation.

THE BUILDING OF A NATIONAL RESOURCE

The storehouse of technology developed through the efforts of the Federal Government represents a national resource for new products and processes. The need for more effective use of this technology led to a cooperative agreement in 1971 between the Department of Defense and the National Science Foundation establishing a technology transfer liaison service to promote communication between DOD laboratories and other agencies. The DOD Technology Transfer Laboratory Consortium was also established in 1971 to improve interlaboratory communication and to expand secondary utilization of laboratory-developed technology. Due to expressed interest in technology transfer by other federal agency laboratories, in 1974 the DOD Consortium was expanded and the FLC was established. Membership in the FLC was open to all Federal Agencies. The FLC has a current membership of over 200 R & D laboratories and centers from 11 federal agencies. This growth in membership is an indication of the interest of the laboratories and their agencies, in maximizing the opportunities for finding new, and often multiple, applications for available (and developing) technologies.

THE ORGANIZATION FOR SERVICE

Each FLC member, or group of members, supports a FLC Technology Transfer Representative who, in addition to representing his or her own laboratory, maintains contact with other governmental and private agencies and research institutions, thus forming a national network of individuals dedicated to technology transfer. In developing the formal FLC organization, every attempt is made to support the specific needs of our technology user groups. This support is demonstrated by the two major operating approaches of the FLC:

1. Improvement of geographic accessibility and person-to-person working relationships through the efforts of our six Regional Coordinators.
2. Functional support provided by the Technical Specialty Coordinator (supported by 10 generic technology specialists) in response to individual requests and inquiries.

The National Science Foundation and the Naval Weapons Center, China Lake, Calif., have provided resources for the establishment of a Secretariat (Program Office) to support the operation of the consortium under policy direction from the FLC Executive Committee. Another key link with the user, comes through the active participation of our Advisory Committee, which represents both the public and private sector user.

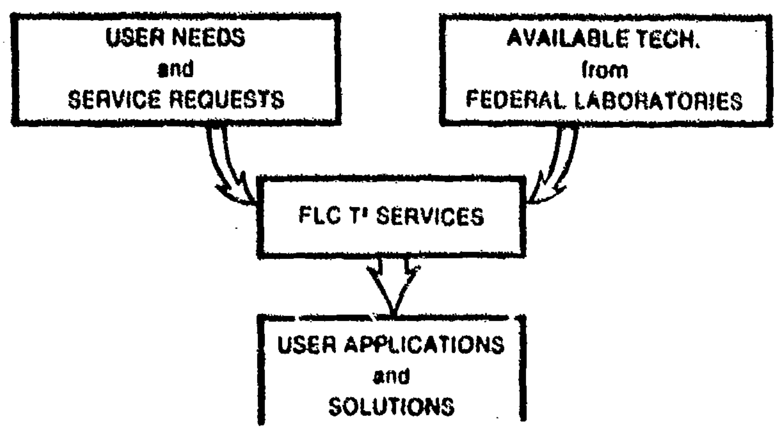
HOW IT WORKS

The transfer process of the FLC depends upon the active person to person participation of the users and individual member laboratory representatives. Simply stated, this process involves:

1. Documentation of R & D results by the laboratories and cataloging of these results by the FLC to identify available resources;
2. Identification and prioritizing of needs and services requests by technology users;
3. Matching of needs and available resources.

The remainder of the process takes one of two paths: (1) a direct transfer where the technology is applicable in its current form, or (2) an applications transfer that involves the need for adaptive engineering or modification before the technology is applicable.

The entire process has proven to be effective through real world experience with a full spectrum of user groups.



THE FLC & PUBLIC LAW 96-480

Public Law 96-480 addresses the need for improved utilization of science and technology and innovation in the U.S.. Section 11, "Utilization of Federal Technology" specifically deals with the involvement of the FLC in achieving that end. The House of Representatives Committee on Science and Technology report on the amendment that resulted in the inclusion of Section 11 expressed the congressional intent with regard to technology transfer as follows:

> "A major objective of the Act is to clearly articulate that it is the intent of Congress to mandate and promote technology transfer activities at the Federal agencies and their laboratories. Thus, Section 11 begins by specifically stating a congressional policy on technology transfer in the Federal government."

The resulting policy statement, quoted previously, is clearly supported by the summary policy statement established in the FLC adopted "Statement of Goals and Objectives."

> "It is the policy of the FLC to identify and mobilize the necessary resources to provide the environment; the organization; and the necessary technology transfer mechanisms required to facilitate the fullest possible utilization of Federally sponsored research and development results by both public and private sector potential users."

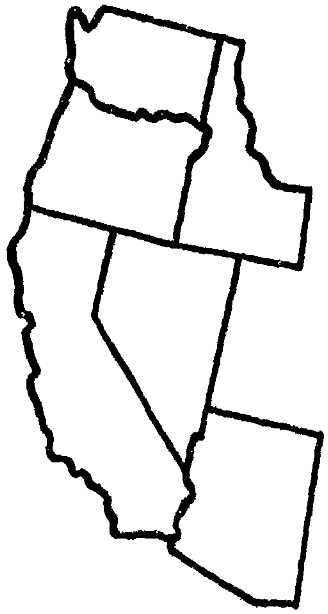
The nature of the two policy statements makes it apparent that the FLC will be instrumental in implementing government policy.

The enactment of PL 96-480 clarified a number of technology transfer policy issues that varied greatly among individual laboratories. This law made technology transfer part of each laboratory's mission. Specifically, each federal laboratory is required to:

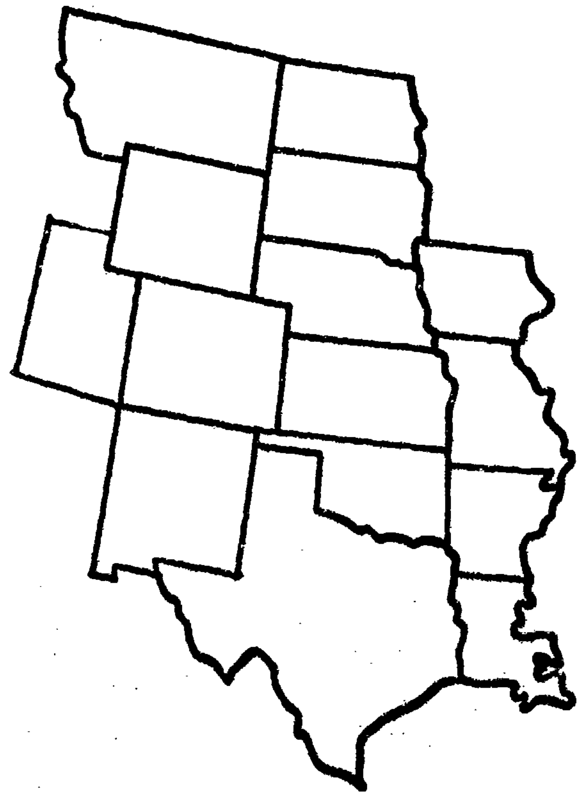
1. Establish an Office of Research and Technology Application (ORTA) to work with potential users;
2. Formally assess laboratory research and development projects determined to have potential for successful application beyond the project;
3. Disseminate information on products, processes and services;
4. Cooperate with Department of Commerce transfer and commercialization programs, the FLC and other transfer organizations; and
5. Provide technical assistance for application as appropriate.

PL 96-480 establishes the framework for a marketing function for our federal research and development investment. FLC expertise can provide the support required for full implementation of PL 96-480 by establishing continuing communication between science and technology sources within the Federal Government and users.

FEDERAL LABORATORY



FAR WEST REGION
LAWRENCE LIVERMORE NATIONAL LABORATORY
Mr. Gerald Richards, L-404
P. O. Box 808
Livermore, CA. 94550
Ph: (415) 422-6416



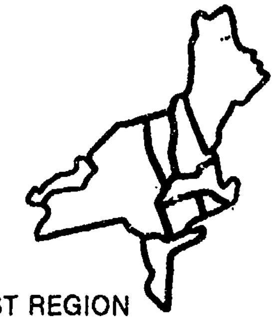
MID-CONTINENT REGION
LOS ALAMOS NATIONAL LABORATORY
Dr. Eugene Stark
MS 352
Los Alamos, N.M. 87545
Ph: (505) 667-1230 FTS: 843-1230

FLC EXECUTIVE DIRECTOR:
NAVAL WEAPONS CENTER
Mr. George F. Linsteadt
Code 3803
China Lake, CA. 93555
Ph: (714) 939-2305/2575
A/V: 933-7109

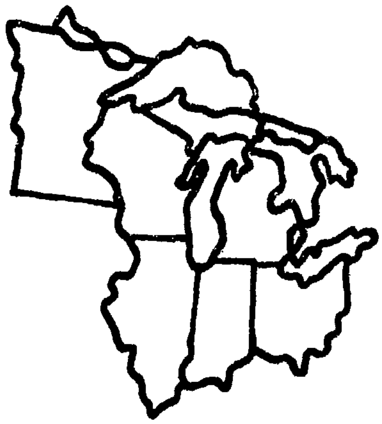
FLC CHAIRMAN:
LOS ALAMOS NATIONAL LABORATORY
Dr. Eugene Stark
MS 352
Los Alamos, N.M. 87545
Ph: (505) 667-1230
FTS: 843-1230

SPONSORING AGENCY
Mr. Charles F. Miller
Federal Laboratories Program Manager
National Science Foundation
1800 G. St. N.W.
Washington, D.C. 20550
Ph: (202) 357-7560

CONSORTIUM

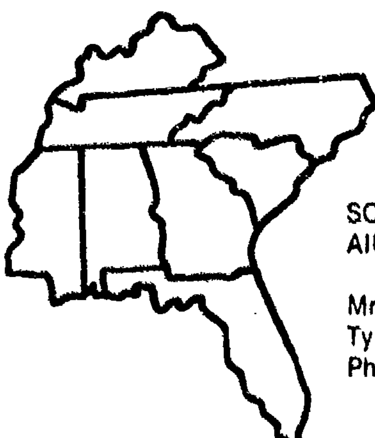


NORTHEAST REGION
NAVAL AIR ENGINEERING CENTER
Mr. Michael Palamar
Code 9011
Lakehurst, N.J. 08733
Ph: (215) 323-2391
A/V: 624-2391



MIDWEST REGION
AIR FORCE WRIGHT AERONAUTICAL LABORATORIES
Mr. James G. Johnson
Wright Patterson AFB, OH. 45433
Ph: (513) 255-5804

MID-ATLANTIC REGION
NAVAL AIR DEVELOPMENT CENTER
Mr. Jerome Bortman
Warminster, PA. 18974
Ph: (215) 441-3100
A/V: 441-3100



SOUTHEAST REGION
AIR FORCE ENGINEERING AND SERVICES CENTER
Mr. Robert E. Brandon
Tyndall AFB, FL. 32403
Ph: (904) 283-6309

To use the FLC, simply contact one of the FLC Regional Coordinators. Each Regional Coordinator, in addition to representing one laboratory, maintains contact with other research institutions and other Federal, private and public agencies, thus forming a National network of people dedicated to helping solve problems.

INDUSTRY

HEAT PUMP WATER HEATER

In the face of rising energy costs and diminishing energy supplies, consumers have been attempting to stretch their energy dollars by turning down thermostats and adding insulation to homes and water heaters. To help consumers achieve long-term energy savings, manufacturers have developed a new kind of energy efficient electric water heater that operates with a heat pump system solely for heating the water.

The concept of a heat pump hot water heater was originated at the Oak Ridge National Laboratory in Tennessee. Development of the concept was subcontracted out to a heat pump manufacturer. To date, approximately six companies are manufacturing various designs of the heat pump hot water heater.

When looking at heat pump water heaters one should consider that the system:

1. Reduces, by 40% to 60%, the energy required to heat water!
2. Provides dehumidification and cooling equivalent to a small room air conditioner, thus possibly eliminating the need for a dehumidifier.
3. Saves more money as more water is heated and when energy cost is high, can pay for itself in 1 to 5 years.
4. Saves about the same amount of energy as solar water heaters at about one third the installed cost.

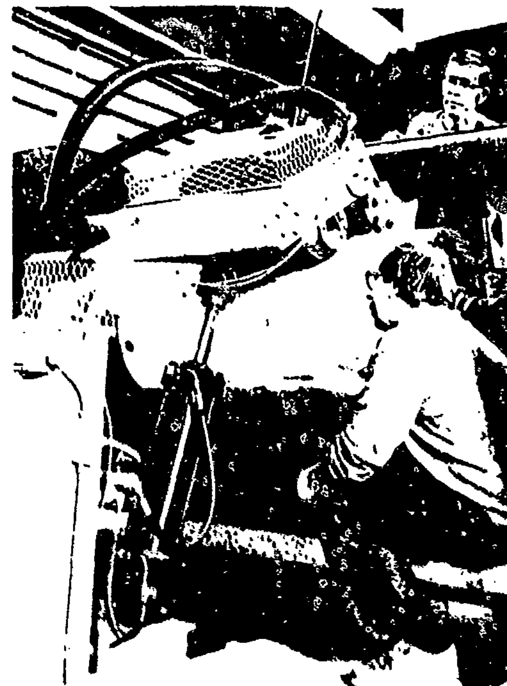
Heat pump water heating is an emerging technology that is expected to compete favorably with resistance water heaters and possibly oil-fired water heaters. Heat pump water heaters provide an alternative to saving energy without interfering with the needed service. If waste heat is available in the ambient air, these water heaters are especially attractive. Separated-type units are quite amendable to do-it-yourself installation. Similarly, integrated-type units can be installed by anyone capable of replacing a water heater.

POWERED BACK-UP ROLLERS

As the country becomes more aware of our natural resources: maintaining, replenishing and better utilizing them . . . help to the forest products industry has come from our nation's Forest Service.

Logs with soft centers, once considered unpeelable, can now be used. Powered backup rollers developed at the Forest Products Laboratory are designed to eliminate spinout on veneer lathes. The powered backup device, a set of two hydraulically powered rollers, turns against the outer surface of the log as it is peeled and helps the chucks (devices that hold and turn the log against the veneer knife) provide torque.

Success with this process has generated strong interest by many lathe equipment and veneer plywood manufacturers. Plans are being made to install the production equipment in an actual mill operation. Estimates indicate that this new technology will save the industry $75,000,000 per year.



The Forest Products Laboratory, the Nation's center for wood utilization research, is maintained in Madison, Wisconsin, by the U.S. Forest Service, and the Department of Agriculture, in cooperation with the University of Wisconsin.

POWER FACTOR CONTROLLER

A Power Factor Controller (PFC) invention resulted from an analysis of solar heating and cooling systems to reduce the power consumed by pump and fan motors used in these systems. It was conceived, fabricated and tested on four electric motors by the Marshall Space Flight Center and was evaluated by Auburn University. The PFC attaches to the leads of an electric motor and reduces the energy wasted within the motor.

Studies indicate that in the U.S.:

1. 50 million electric motors are manufactured annually;
2. Electric motors consume about two thirds of all electrical energy generated;
3. Electric motors use one third more energy than automobiles;
4. Electric motors require 6 million barrels of oil equivalent (1.5 million tons of coal) daily.

A 4% reduction in power consumption would:

1. Save 250,000 barrels of oil equivalent daily;
2. Save over one billion dollars annually (at $14.00 per barrel).

The PFC applies to induction type electric motors — the most commonly used type in all major home applicances and the most commonly used by industry. In addition, the PFC is applicable to both single and three-phase motors. The PFC causes the motor to run quieter and cooler, thus extending its life.

Air conditioning costs are saved due to a minimizing of cooling required to neutralize the heat generated. Payback time for the device can be enhanced by double duty.

The PFC has received worldwide publicity... over 9,800 inquiries have been answered by the Marshall Space Flight Center. Approximately ten companies are now licensed to manufacture the device. Cost estimates range from $14.00 for the 1 hp single phase motor in quantity; original equipment installation cost quotes are lower.

TECHNOLOGY ACTION CENTER

Within the Federal Government, a vast storehouse of developing technology exists. The Santa Clara Chamber of Commerce Technology Action Center (TAC) was designed to address the problem of disseminating that technology into the private sector as efficiently and as cost effectively as possible.

The basic approach of TAC is that successful technology transfer requires active participation on the part of both the technology suppliers and users. The technology "suppliers" within the Federal Government are represented by the Federal Laboratory Consortium (FLC). TAC is designed to effectively represent the potential user of federally developed technology. The Chamber of Commerce was chosen as a sponsoring agency to achieve "economy of scale" as well as to provide access for all local firms to government-developed technology.

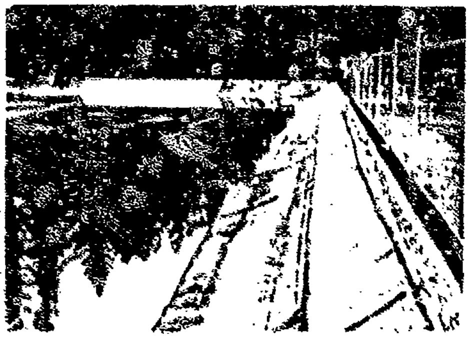
TAC provides an efficient, centralized point for Santa Clara Valley industries and businesses to utilize the FLC resource, and provides a two-way communication mechanism for the application of new technology in problem solving and product development. TAC sponsors a coordinator to work directly with FLC technology utilization personnel and with users to assure an appropriate match between questions and needs, as well as the "right" contact within the vast federal laboratory complex. TAC can also keep users current on potential products that are ready for commercialization from the federal laboratories.

The Santa Clara Chamber of Commerce is convinced that the center will provide the Santa Clara business community with an opportunity to significantly enhance the use of government developed technology while saving time and money.

GOVERNMENTS

LOCAL, STATE & FEDERAL

BEAVERTON BLANKET



The City of Beaverton, Oregon had a problem! The city's treated water is purchased from Portland and stored in a 5,500,000 gallon capacity reservoir protected by a rubberized fabric cover. When the city was forced to begin a treatment process to ensure the life of the covering, the trouble began. The treatment resulted in a repugnant odor in the water, causing citizen alarm and threats of lawsuits. The question was how to treat the covering and eliminate the odor problem.

The city sought help from the appropriate state agency and then from a private testing lab in the Portland area. Achieving no success with either source, they contacted the Pacific Northwest Innovation Group (PNIG). PNIG turned to the FC for help. Samples of the cover, paint and water were sent to the Lawrence Livermore Laboratory, Livermore, Calif. After extensive testing of the samples, the source of the problem was found and two suggestions for a cure were forwarded to the city. The bottom line was very simple: through the research work at the federal lab, the City of Beaverton saved considerable money by avoiding possible lawsuits and by not having to replace the rubber cover.

VIDEO CAMERA

The Navy expects to save more than $350,000 a year because of a stop-action video camera that has just been patented by personnel at the Naval Weapons Center, China Lake, Calif.

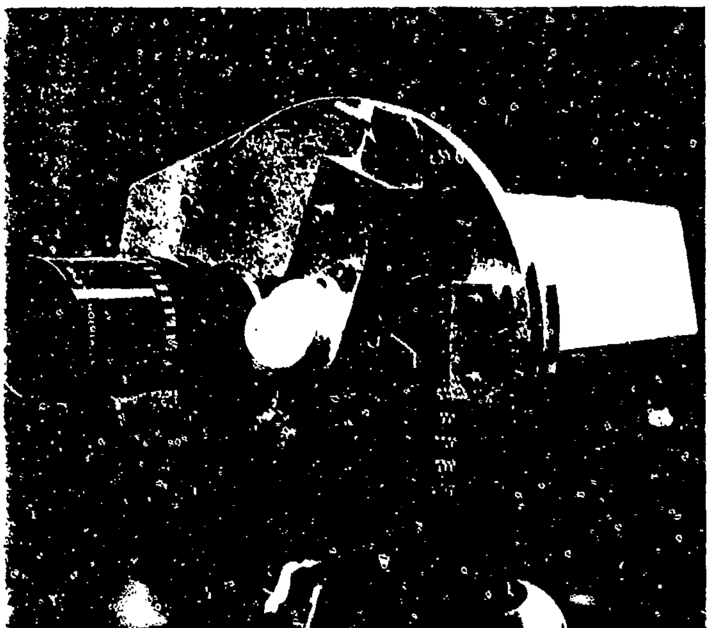
This metric video camera stops motion at a ten-thousandths of a second on a video tube and improves resolution of the picture to enable accurate measurement of miss distances, muzzle velocities and seat ejection sequences, etc. When two videos are used, the miss distance can be calculated automatically and displayed within 20 seconds.

Such measurements formerly had to await the development of movie film and several weeks often elapsed before test results could be accurately determined. Money will be saved not only because

of prompt and accurate results on video, but also because of the vast quantities of film that will be saved. Film uses much silver emulsion, and with the dramatic increase in the price of silver, film costs have shot up. Metric video uses videotape which can be degaussed and recycled; the same tape can be used more than a thousand times.

The Center is proceeding full-speed to get the system operational as completely as possible. By 1983 the metric video will replace film cinetheodolites, track sight cameras, muzzle velocity and fuze function cameras, among others.

Practical applications for metric video are expected to increase. The commercial television networks have expressed interest in metric video for sports programming to freeze action for viewers. And, to date, five industrial firms have picked up nonexclusive licenses.



NEW YORK POLICE FUEL MONITORING SYSTEM

It seems reasonable to say that almost every imaginable municipal problem exists in New York City, and on a grand scale. The size of the city alone necessitates a large bureaucratic organization which, in turn, lengthens the time-frame in which any innovation can take place. New York has experienced severe budgetary constraints since its fiscal crisis several years ago. Some intergovernmental demonstration projects, funded by the National Science Foundation and supported by Naval Underwater Systems Center (NUSC), New London, Conn., and other federal laboratories, were developed to help assume the initial risk of innovative programs in local governments. It is through this program that NUSC became involved in helping the New York City Police Department set up a fuel monitoring system.

Keep in mind, the NYCPD operates 4,000 motor vehicles with 25,000 operators (most of them officers) and uses over 6,000,000 gallons of fuel a year. This makes the department's fueling operation larger than that of most cities!

NUSC studied the situation and identified four main system problems. The results were sent to department management along with some alternatives for upgrading the existing system and recommendations for an automated on-line fuel monitoring system. The projected cost savings for the first year was over $500,000 . . . over and above the cost of operating the automated system!

The NUSC analyst designed the system, wrote the specifications, evaluated bids, supervised the installation and critiqued it for the NYCPD. He then redesigned the total system and repeated the administrative processes.

A number of states, including New York and Pennsylvania, and cities, New Orleans for one, have visited the project site and are interested in replicating the system. A major effort is being made to transfer it to the Federal Government.

COMMUNITY

PEOPLE-TO-PEOPLE, EDUCATION, HEALTH & EMERGENCY ASSISTANCE

TECHNICAL VOLUNTEERS

Technical Volunteer Service is an informal system of free assistance for technical problems offered by retired Naval Underwater Systems Center (NUSC) employees. The service has been helpful to communities around Newport, R.I., where one laboratory of NUSC is located. The program is a small part of the Navy technology transfer goal of spinning off the benefits of science and technology into the private and public sectors.

Over 300 regular volunteers and 35 retirees are currently signed up to help. Their projects have included repairing a broken antenna to allow the high school to reinstate the audio visual system to curriculum use; helping the police department to improve their photo developing equipment; using a leak detecting device to find broken underground pipelines; and helping city management prepare to set up a planning department.

OTTO

The Ohio Technology Transfer Organization (OTTO) was founded by the Ohio Board of Regents to serve the needs of business and industry through the state's network of two-year colleges and Ohio State University.

The partnership of educational institutions and state and federal agencies ensures that small business and industry have access to the information, advice and services so essential to job growth and economic development. The mission of the technology transfer agents, located on each of the OTTO campuses, is to assist small business enterprises in learning and using current knowledge.

This brokerage function provided by OTTO is a major two-way avenue for seeking out and utilizing the technologies developed by

the federal laboratories. The working relationship between OTTO and the FLC is a prime example of how the public and private sector can be successfully linked to provide a continuous flow of applicable technological information for the advancement of all participants.

MT. ST. HELENS' SEDIMENT

Nature's spectacular fireworks show May 18, 1980 created a monumental cleanup job for the residents of Washington state. St. Helens' eruption also set the stage for another disaster to take place 6 months later -- the massive mud slides and flooding that would occur when the year-end rainy season hit. An estimated three billion cubic yards of volcanic materials spewen out during the eruption had moved downstream from Mount St. Helens' and filled the riverbeds of the Toutle, Cowlitz and Columbia Rivers. Navigation on the Columbia River came to a halt within 24 hours and the flow capacity of the Cowlitz River was reduced by 85%.

Further upstream, in the area of both forks of the Toutle River, another problem became apparent. Vegetation had been completely wiped out during the blast, therefore increasing the potential for erosion and mudflows downstream when the winter storms arrived.

While personnel from the U.S. Geological Survey and National Forestry Department, along with other agencies were busy studying the eruption aftermath and its affect on the landscape and wildlife, federal laboratory personnel from the U.S. Army Corps of Engineers from the Portland District and the Waterways Experiment Station in Vicksburg, Miss. were summoned to evaluate the situation and to determine how to avoid year-end flooding.

The results of all the studies may help us understand more about our world and to predict future natural disasters. The massive dredging operation, combined with the construction of debris-retaining structures at the forks of the Toutle River, shows that we have the technology to deal with the surprises that "Mother Nature" continues to send our way. The effort is a credit to the personnel of the various labs and agencies, who are ready to help at a moments notice.

NASA UNIVERSITY PROGRAM

Employed primarily as an instrument for building university capabilities in remote sensing, a NASA University Applications Program is complementary to, but somewhat different from other programs. Through grants to universities, NASA seeks to develop new sources of remote sensing expertise within the states, with the goal of facilitating independent state or local government use of the technology. NASA funds about 20 university programs a year and endeavors to spread the funding geographically, with the ultimate aim of creating university capabilities in all of the states.

The university applications group is composed of faculty members and graduate students representing a number of different scientific and technological disciplines. It has a threefold assignment: to stimulate interest among prospective users of satellite-derived information; to conduct the research and development necessary to adapt remote sensing technology to the solution of a specific problem; and to demonstrate the applicability of the technology. The groups search — within their states and usually at the sub state level — for urgent problems that seem open to solution by application of remote sensing techniques. Applications selected for demonstration are those which have not previously been tested and which, if successful, may inspire further use of the technology demonstrated. Projects are conducted on a one-time-only basis under NASA grant funding, but successful applications often result in follow-on projects of a similar nature, carried out with state funding or supported by user fees. Grants are retired on a time-phased basis and a number of universities have "graduated" from the program and have become self-sustaining sources of remote-sensing expertise.

OCULAR SCREENING SYSTEM

The Ocular Screening System, a much-needed accurate method of detecting eye defects and diseases, was developed by Marshall Space Flight Center. The need for such a device was originally identified by a Huntsville, Ala. opthalmologist and surgeon who had noticed a difference in eye color and pupil images amoung his patients. Due to this observation, the eyesight of untold numbers of children may be saved as a result of utilization of space age technology.

The system consists of a 35 mm camera with a telephoto lens and strobe light, plus an optical correlator which is being developed for comparing retinal reflexes of the subject's eye. The strobe, mounted just below the level of the camera lens, sends light into the subject's eyes from a distance of 21 feet. This light is reflected from the retina at the rear of the eye back out to the camera lens and onto color film. Two healthy eyes will have pupils which appear red and have identical images. When pupils appear different, this is an indication of amblyopia, tumors, cataracts, crossed eyes or other defects.

The retinal reflex screening test is fast, does not require the subject to be in a special examination room, and does not require that the subject talk or cooperate any more than to look at the lens of the instrument. Therefore, this device becomes an especially important means of screening infants, small children and other non-communicative persons for vision problems.

Since many undetected vision problems can result in the loss of sight, the ability to provide early detection may save many children and adults from a life of darkness.

MT. ST. HELENS: CAR FILTERS (COVER STORY)

The problem was very simple: after the eruption of Mt. St. Helens, motorized transportation in the impacted area was coming to a complete halt because of engine and transmission ingestion of ash particles. Emergency vehicles could not function, portions of the interstate were blocked due to vehicle failures, and evacuation was seriously jeopardized.

There was no time to sit down and try to figure out what to do. We needed an immediate solution to the immediate problem! A call went out to the Department of Transportation, and through a listing of FLC members and abilities, the Army Tank — Automotive R & D Command (TARADCOM) Laboratory in Warren, Mich. was contacted and briefed on the situation.

TARADCOM sent a five member team to the area and within a day of arrival, they had designed, built, installed and tested a prototype device to eliminate the ash-ingestion problem. The final design and unit installation on Washington state patrol vehicles was made before the second eruption May 25th!

The TARADCOM team, with support from the material suppliers and mechanics from the police department and industry, devised the air-filtration system add-ons. The system incorporates a cylindrically shaped filter mounted to the push bars on the front of the vehicle. The filter is attached by hose to the airhorn on the vehicle air filter "hat", thereby filtering the air entering the carburetor. To keep ash out of the passenger compartment, several layers of filter material are placed over the cowl intake vents. Transmission and differential vents are fitted with charcoal gasoline filters.

After the immediate crisis situation was under control and during their two week stay in the area, the team members, working with the Federal Energy Management Agency, provided technical advice to the general public and all levels of government.

The dedicated work of all the people who rushed to the aid of the State of Washington after the eruption of Mt. St. Helens is not only a supreme example of what can be accomplished through technology transfer but is also an example of what can be accomplished through people to people transfer! Members of the FLC are proud to have been a small part of this story's happy ending!

A SPECIAL THANK YOU!

The material presented in this document is based upon information provided by FLC member laboratories. A special thank you is extended to the individual FLC Representatives from these laboratories for supplying both narrative information and pictures.

FLC '82 was prepared by DelaBarre & Associates
1945 N. Fine Ave., Bldg. #109, Fresno, Calif. 93727
Ph: (209) 251-6079

Designer/Editor: Sharon DelaBarre

THE FUTURE

The need for the domestic technology transfer service provided through the FLC contributes to the maintenance of a healthy U.S. economy. The role of the FLC as an organizational entity may change in time; however, the FLC is designed to accommodate such change. The vital ingredient in the process is a continuing team effort between the federal laboratories and the public and private sector technology users. International trade and a healthy balance of payments are only two of the important national policy issues at stake.

The FLC will continue to take a leadership role in the improved utilization of the results of our federal research and development investment. Strategies will change with changing situations; however, the basic need for technology transfer will remain, and the FLC will continue to respond to that need.

APPENDIX C

ARTICLES ON TECHNICAL VOLUNTEERISM

GUEST EDITORIAL

First I'd like to say that I appreciate the opportunity to write this guest editorial. As the Navy coordinator for the Domestic Technology Transfer Program, I am pleased with the effort in the FLC to encourage and respond to agency involvement and the FLC support for technical volunteers.

I believe, as most of you do, that the secondary application of the technologies that are developed by our agencies makes good sense. It makes sense as an investment which brings both direct and indirect returns, and it makes sense to our country.

But all of our resources are carefully measured and controlled, and lots of programs that make sense end up competing for pieces of an all-too-finite pie.

That's where technical volunteers can play an important role, and where domestic technology transfer can capitalize on some unique circumstances.

Giving freely to help others has been societally admired and personally rewarding in our country, and that hasn't changed. But the methods of acting on that value have become less available and less obvious.

We no longer live in closely knit interdependent communities, so our reliance on each other isn't as clear and direct as it once was. For those of us who are technically trained, the impulse to give of our technical expertise is frustrated, and we find that what we do for a living is often remote from people-related application and from the needs of our States and Local communities.

Now couple that personal frustration of technically trained people with the typical volunteer programs available such as work programs, church work, civic groups, and charities. Although all of these programs can be rewarding to people working with them, none are structured to take advantage of the unique expertise of technically trained volunteers. Developing programs that take advantage of this expertise presents an exciting opportunity.

The Navy has played a vital role in pioneering the use of technical volunteers. We now have a well established program at the Naval Underwater Systems Center, and we are cooperating with the Administration on Aging in starting new technical volunteer programs at the Naval Air Development Center and the David W. Taylor Naval Ship Research and Development Center. The Navy is also supporting efforts to institutionalize and expand the concept of technical volunteerism throughout the Federal Laboratories.

The Federal Laboratory Consortium can play an expanding role in fostering the use of technical volunteers, and I applaud the effort evidenced by the special NEWS ITEMS issue.

But organizations only help start the process. It takes people in action, people with vision and energy and a desire to offer their expertise, in order to improve things.

FLC News Items
September 1983
Issue # 94

Domestic technology transfer is part of the mission of every Federal Research and Development activity, and technical volunteerism offers one practical approach to making it happen even in the face of resource constraints and competing priorities.

Our colleagues whose names and activities are mentioned in this special volunteerism NEWS ITEMS issue have made a beginning. It's up to all of us to go on from here.

LABORATORY VOLUNTEERS IN LOCAL GOVERNMENT SERVICE

Theodore J. Maher

The agendas of local governments are crowded. Issues that once could be contained within one jurisdiction now tend to overflow and engage continguous communities. Hunch and intuition no longer can be relied upon in allocating budgets, estimating revenues, or locating public facilities. Shaping strategies for economic development has become a bigger task than advertising a hospitable tax climate -- it is a complex balance of infrastructure, labor supply, social services, energy resources, and environmental protection. Dominating the whole local government scene is the ends-means squeeze: the fact that many jurisdictions are in, or approaching, financial trouble.

The new business of local government points strongly to a range of policy and program priorities which involve risks, costs, and uncertainty -- the familiar elements that are found in innovation. Policy positions developed each year by the U. S. Conference of Mayors show the rising temperature of public responsibility in local government. Many chief executives have the problems of crime, transportation bottlenecks, deteriorating bridges, roads, curbs and gutters, air and water pollution, hazardous waste disposal, land use management, together with automation, consumer protection, health care, and other technology intensive problems.

These issues add up to an immense demand on top management, both executive and legislative. They bring into question the adequacy of institutions and methods of decisionmaking. As local governments deal increasingly with problems of choice that are affected by scientific and technical factors, mayors, managers, and county officials must have better information for decisionmaking. In short, what is lacking is not the know-how but the system, or arrangements, for helping local governments to find technology when they need it, adapt it to program objectives and available budgets, and apply it.

The uses to be made of technology are decisions that the local governments must make. New technology cannot be forced upon them. The objective is clearcut: to acquaint local public officials with information and options in an organized and manageable way. The decision to use, modify, or forego available technology is strictly theirs. But absent a system for getting at the options, local governments have no handle on new technology, and they are left to grope in the dark.

This is what lies behind the establishment of laboratory volunteer progams. In a system geared to matching technology with the policy and operational priority needs of localities, the laboratory volunteer would become a combination of catalyst, broker, and customer's man between the new technology and its potential users. Lacking this connective, technology and local government are poorly coupled and the volunteer mechanisms have no constituencies.

As matters now stand, a laboratory volunteer program has great potentiality and raises some question marks. On the plus side, such volunteer programs can: (a) infuse new blood into tired institutions, (b) stimulate fresh concepts and policy alternatives, and (c) accelerate the formulation of new initiatives in time to accomplish changes in the period that a local official

FLC News Items
September 1983
Issue No. 94

has to get things done. The volunteer approach has the great advantage of filtering a mix of scientists and experts through local government for brief but important tasks. It multiplies the contacts of government scientists and technicians of top quality with the local government system, hopefully enriching both it and them. The approach has the added benefits of bringing new perspective and ideas to the community and of keeping the line agencies alert and in touch with fresh thought. By fitting the expertise to the problem, it's a strategy that is well suited to the opportunistic play of issues on the local leadership's agenda. From the standpoint of customer satisfaction, the volunteer approach has a lot in its favor. It takes much of the vagueness and mystique out of "science and technology" and concentrates know-how upon needs that are real and tangible.

Given the right working premises, a technical volunteer can be a valuable asset in local government. There are several "ifs": if he has the ear of decisionmakers; if he understands elementary local government and politics; if he is used when he should be used; if he takes the trouble to work at the level of the operating agencies; if he knows how to communicate with politicians as well as his scientific peers; and if he can work fast and get good results under pressure. Absent very many of these conditions, the volunteer will have trouble in local government. The point is that the interface of the user and the federal laboratory is not sufficient in itself. The third party role -- in this case the technical volunteer -- is what provides the catalyst for transferring the technology. And frequently, the process of adaptation requires knowledge of the"soft" sciences -- the social sciences -- in order to grasp the institutional problems faced all the time by localities. These skills are as essential in intergovernmental and interagency technology transfer as the technical disciplines are to R&D.

The volunteer role is a formidable one. It involves helping to frame user problems in "research" terms; understanding social and political realities; and transferring technology. That burden can be eased by teaming the volunteer with other intermediary organizations familiar with local government operations and needs.

All in all, the technical volunteer program is one of the bright spots in intergovernmental relationships and can provide a local linkage to the scientific and technical riches of the Nation.

SPECIAL EDITION

The FLC 1984

★ 1984 FEDERAL LABORATORY CONSORTIUM FOR TECHNOLOGY TRANSFER ★

1984 MARKS 10 YEARS OF SERVICE FOR FLC

The Building of a National Resource

The storehouse of technology developed through the efforts of the Federal Government represents a national resource for new products and processes. The need for more effective use of this technology led to the establishment of an interagency Federal Laboratory Consortium for Technology Transfer (FLC) to improve interlaboratory communication and to expand secondary utilization of laboratory developed technology. The FLC has grown from its original 34 laboratories to over 300 laboratories and centers representing 11 Federal Agencies. This growth in membership is an indication of the interest of the laboratories and their agencies in maximizing the opportunities for finding new, and often multiple, applications for available (and developing) technologies.

The FLC is designed as a service organization providing basic linkage capabilities for its members and the technology users. Each FLC member, or group of members, supports a FLC Technology Transfer Representative who, in addition to representing his or her own laboratory, maintains contact with other governmental and private agencies and research institutions, thus forming a national network of individuals dedicated to domestic technology transfer. Within the formal FLC organization, every attempt is made to support the specific needs of individual technology user groups. Geographic accessibility and person to person working relationships have been enhanced through the efforts of six Regional Coordinators. Another key link with the user, comes through the active participation of an Advisory Committee, which represents both the public and private sector user.

The transfer process of the FLC depends upon the active person to person participation of the users and individual member laboratory representatives. Simply stated, this process involves: 1) Documentation of R&D results by the laboratories and cataloging of these results by the FLC to identify available resources; 2) Identification and prioritizing of needs and services requests by technology users; and 3) Matching of needs and available resources.

The remainder of the process takes one of two paths: 1) a direct transfer where the technology is applicable in its current form, or 2) an applications transfer that involves the need for adaptive engineering or modification before the technology is applicable.

The entire process has proven to be effective through real world experience with a full spectrum of user groups.

PUBLIC LAW FACILITATES TECHNOLOGY TRANSFER

Federal Agencies and Their Laboratories Receive Support from PL96-480

Washington, D.C.

"It is the continuing responsibility of the Federal Government to ensure the full use of the results of the Nation's Federal Investment in research and development. To this end the Federal Government shall strive where appropriate to transfer federally owned or originated technology to state and local governments and to the private sector."

This statement of policy contained in the Stevenson-Wydler Technology Innovation Act of 1980 (Public Law 96-480) typifies the decade-long evolution of the Federal Laboratory Consortium for Technology Transfer (FLC).

Public Law 96-480 addresses the need for improved utilization of science and technology and innovation in the United States. Section 11, "Utilization of Federal Technology" specifically deals with the involvement of the FLC in achieving that end. The House of Representatives Committee on Science and Technology report on the amendment that resulted in the inclusion of Section 11 expressed the congressional intent with regard to technology transfer as follows: "A major objective of the Act is to clearly articulate that it is

Continued on Page 2

Continued from Page 1

the intent of Congress to mandate and promote technology transfer activities at the Federal agencies and their laboratories. Thus, Section 11 begins by specifically stating a congressional policy on technology transfer in the Federal government."

The resulting policy statement, quoted previously, is clearly supported by the summary policy statement established in the FLC adopted "Statement of Goals and Objectives". "It is the policy of the FLC to identify and mobilize the necessary resources to provide the environment; the organization; and the necessary technology transfer mechanisms required to facilitate the fullest possible utilization of Federally sponsored research and development results by both public and private sector potential users."

The nature of the two policy statement makes it apparent that the FLC can be instrumental in implementing the government's policy regarding the utilization of federal technology.

PL 96-480 establishes the framework for a marketing function for our federal research and development investment. FLC expertise can provide the support required for full implementation of PL 96-480 by establishing continuing communication between science and technology sources within the Federal Government and users.

FLC Regions Sponsor Government Industry Technology Transfer Conferences

Washington, D.C.

In April of 1982 the Mid-West Region of the FLC and Aladdin Industries, Inc. jointly sponsored a Government Industry Technology Transfer Conference in St. Louis, Missouri. The lead FLC Laboratory handling logistics for the conference was the Northern Regional Research Center. The format developed by Alva Frye, Vice President of Aladdin Industries, in a series of University-Industry Conferences, proved to be well suited to government laboratories also. A group of 20 to 25 major industries were represented at the conference to discuss the types of technology that might serve their needs. The laboratories, in turn, presented first a general discussion of the strengths of their organization and specific technologies they were ready to share.

In February, 1983, the Mid-Atlantic Region of the FLC sponsored a second conference in Baltimore, Maryland. The National Bureau of Standards served as lead laboratory for this conference. Ten laboratories from the region met with representatives of 23 industries. The formal laboratory presentations were followed by an afternoon session of one-on-one exchanges which allowed industrial participants to go into greater detail and arrange for follow up on technologies of special interest.

Alva Frye credits the compact one day schedule for the conference and their location at hotels near major airports with part of the credit for drawing top industrial scientists and engineers to the meetings.

One laboratory reported that a team of engineers visited their laboratory within a few weeks of the conference, tested a new measurement procedure and made plans to implement it in their facilities in cooperation with the laboratory. Another lab reported intensive interest in a new industrial pollution control process under consideration for incorporation in a new power plant.

Current FLC plans call for continuation of the conference series in the Northeast and Far West regions of the Consortium in mid 1984.

INDUSTRY EXECUTIVES LEARN ABOUT RESEARCH

Argonne, IL

Nearly 60 research and development executives from private corporations across the nation participated in a workshop at Argonne to evaluate opportunities for industrial applications of research at the laboratory.

The high-technology workshop, entitled "Spotlight on Argonne," was the first ever held at a non-weapons laboratory of the Department of Energy by the Industrial Research Institute (IRI), an organization of research executives from 277 industrial corporations.

In providing an overview of Argonne, Walter E. Massey, Laboratory Director, stressed the importance of Argonne's interaction with the outside community, such as universities and industry.

Workshop participants were introduced to about 20 different

Continued on Page 3

Continued from Page 2

research programs at Argonne. Session topics ranged from the development of new materials to meet the requirements of future advanced technologies, to fundamental research in chemistry, physics and other sciences which contribute heavily to the development of advanced energy systems. Other sessions focused on innovative biological and medical research, such as the automated diagnosis of diseases.

The participants also visited and learned about Argonne's three major research facilities that are available for industry users - the High Voltage Electron Microscope, the Argonne Tandem-Linear Accelerator and the Intense Pulsed Neutron Source.

About 50 Argonne staff members also participated in the conference that attracted industrial executives from such research and development companies as Gould, Inc., Amoco Oil Co., Borg-Warner Corp., The Dow Chemical Co., Deere & Company and U.S. Steel Corp.

The conference was organized by Richard O. Ivins, director of Argonne's Office of Industry Interaction and Technology Transfer, and is part of an ongoing effort by an IRI/National Laboratories Task Group to create an awareness of the information and experimental resources available in the national laboratories. Additional workshops are planned at other national labs.

FLC NATIONAL CONTACTS

FLC CHAIRPERSON
Dr. Eugene Stark
Los Alamos National Laboratory
MS F-685
Los Alamos, NM 87545
(505) 667-4960, FTS 843-4960

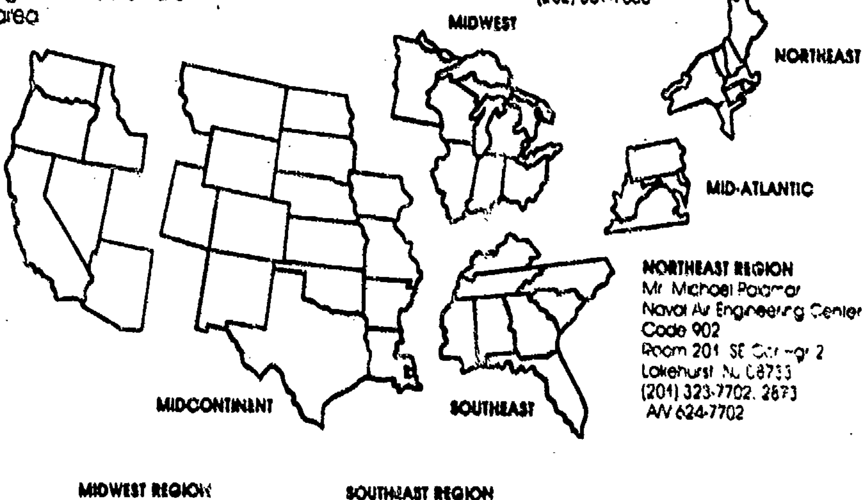
FLC EXECUTIVE DIRECTOR
Dr. Theodore J. Maher
USDA Extension Service
3917 South Bldg
Washington, D.C. 20250
(202) 447-4407

TECHNICAL SPECIALTY COORDINATOR
Mr. Clifford Lanham
Harry Diamond Laboratory
Code DELHD-TT
2800 Powder Mill Road
Adelphi, MD 20783
(209) 394-2296, A/V 290-2296

WASHINGTON, D.C. LIAISON
Mr. Gloria Pelea
National Science Foundation
DRII
1800 "G" Street, NW
Washington, D.C. 20550
(202) 357-7560

FLC REGIONAL CONTACTS

are available to help you access federal laboratory technology. We suggest you contact the FLC Regional Coordinator responsible for your area.



FAR WEST REGION
Dr. Loren C. Schmid
Battelle Pacific Northwest
P.O. Box 999
Richland, WA 99352
(509) 375-2559

NORTHEAST REGION
Mr. Michael Palamar
Naval Air Engineering Center
Code 902
Room 201, SE Carriage 2
Lakehurst, NJ 08733
(201) 323-7702, 2873
A/V 624-7702

MIDCONTINENT
Mr. Robert P. Stromberg
Sandia National Laboratory
Tech. Transfer Officer, Org. 400
Albuquerque, NM 87185
(505) 844-5535, FTS 844-5535

MIDWEST REGION
Mr. Bruce C. Huguelet
Argonne National Laboratory
OTD 201 2S-08
9700 S. Cass Avenue
Argonne, IL 60439
(312) 972-3064, FTS 972-3064

SOUTHEAST REGION
Mr. Donald Jared
Oak Ridge National Laboratory
Research Applications Office
P.O. Box X
Oak Ridge, TN 37830
(615) 574-4192, FTS 624-4192

MID-ATLANTIC
Mr. Jerome Bortman
Naval Air Development Center
Code 7031
Warminster, PA 18974
(215) 441-3070, A/V 441-3070

ARMY PORTAWASHER CLEANS UP

Champaign, ILL

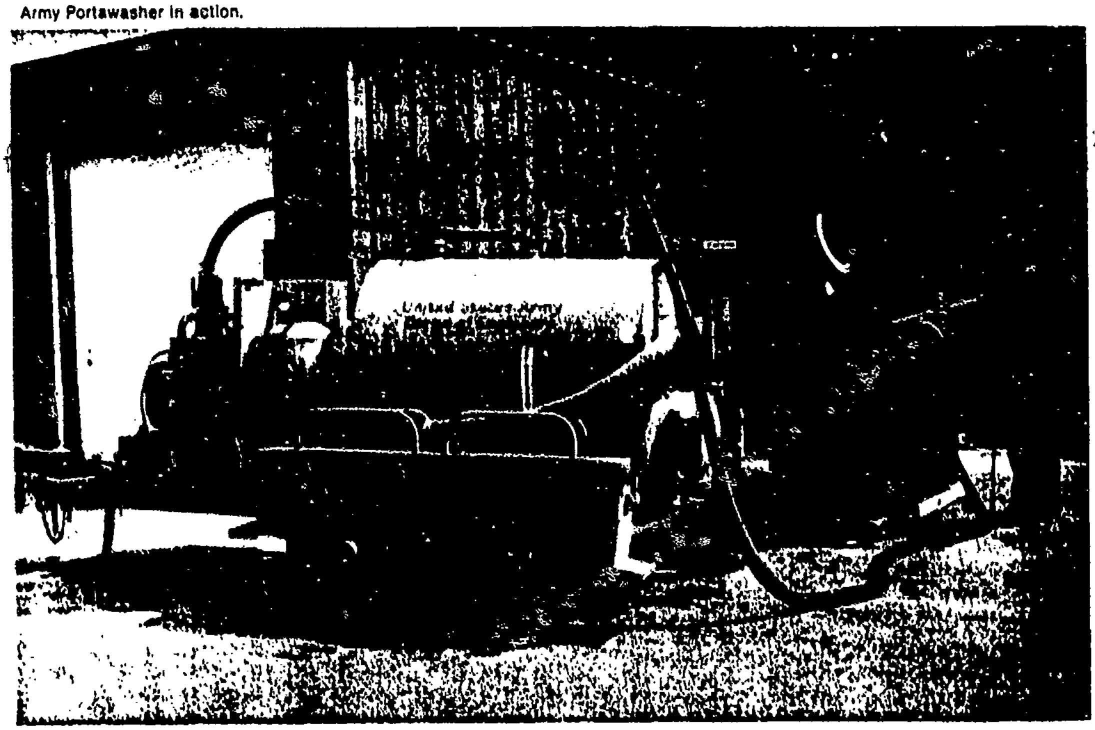
Nobody likes the idea of cleaning garbage cans, however Army Regulation 420-47 requires that refuse dumpster containers be cleaned regularly in order to "maintain general sanitary conditions and to prevent nuisances." The average army installation may have 500 dumpsters which require a total of about 1000 cleanings per year.

After studying several existing cleaning methods, engineers at the U. S. Army Construction Engineering Research Laboratory (CERL), Champaign, IL, developed the Portawasher. The Portawasher is designed to clean dumpsters in place rather than transporting them to a central location. It uses high pressure hot water with vacuum retrieval of the waste water. One person with a Portawasher should be able to clean 15 dumsters per day.

Besides on-site cleaning of equipment or structures, the Portawasher can be used to clean up chemical and oil spills, service portable toilets and potentially many other applications.

Design specifications for the CERL Portawasher have been transferred to two independent companies. Industrial & Municipal Engineering, Galva, IL, is marketing the development as PORTAWASHER. Power Cleaning Systems Ltd., Grantville, PA, is marketing its version as the ScrubaDubster. The CERL Portawasher is a new product line for both companies.

Army Portawasher in action.



4

FOREST PRODUCTS LAB REVOLUTIONIZES FRAMED CONSTRUCTION

Madison, WI

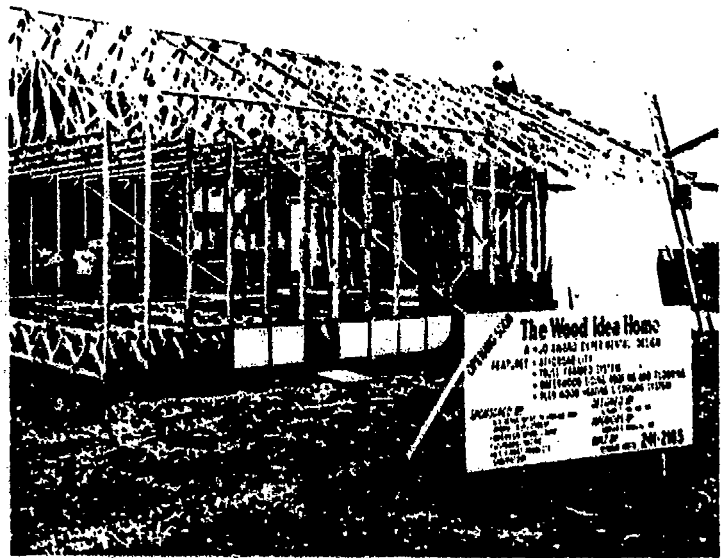
More than 1,200 homes have been constructed in 23 states using the truss-framed system (TFS). The truss-framed system of construction was conceived at the U.S. Forest Products Laboratory, Madison, WI, as part of its mission to find efficient ways to utilize timber resources. TFS saves time, money and natural resources without sacrificing construction quality, durability and strength.

The truss-framed system is suitable for residential and light industrial building construction. The system's key structural component is a wood truss frame composed of a roof truss and wall studs secured together in a single rigid unit. All framing is done with one lumber size, 2 x 4, rather than with more costly dimension lumber commonly used for floor joists and beams. Truss frames are fabricated in a plant under controlled conditions and quickly erected on site by the fabricator or builder.

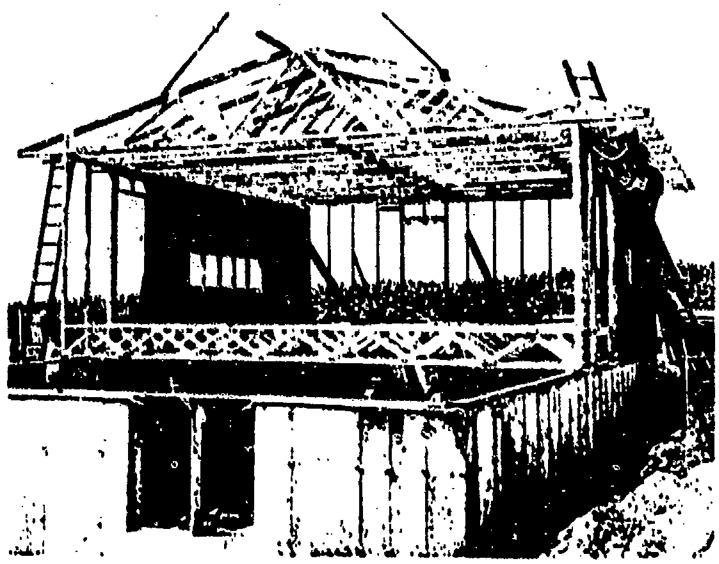
The TFS has been assigned public patent and as such is available to anyone who wishes to make use of it. A number of builders are currently using the system. A TFS Construction Manual is available from the National Association of Home Builders Research Foundation, Rockville, MD.

TFS CONSTRUCTION MANUAL

is available from the National Association of Home Builders Research Foundation, Rockville, MD.



Applications of Truss-Framed System construction.



OAK RIDGE LAB RECOVERS URANIUM FROM FERTILIZERS

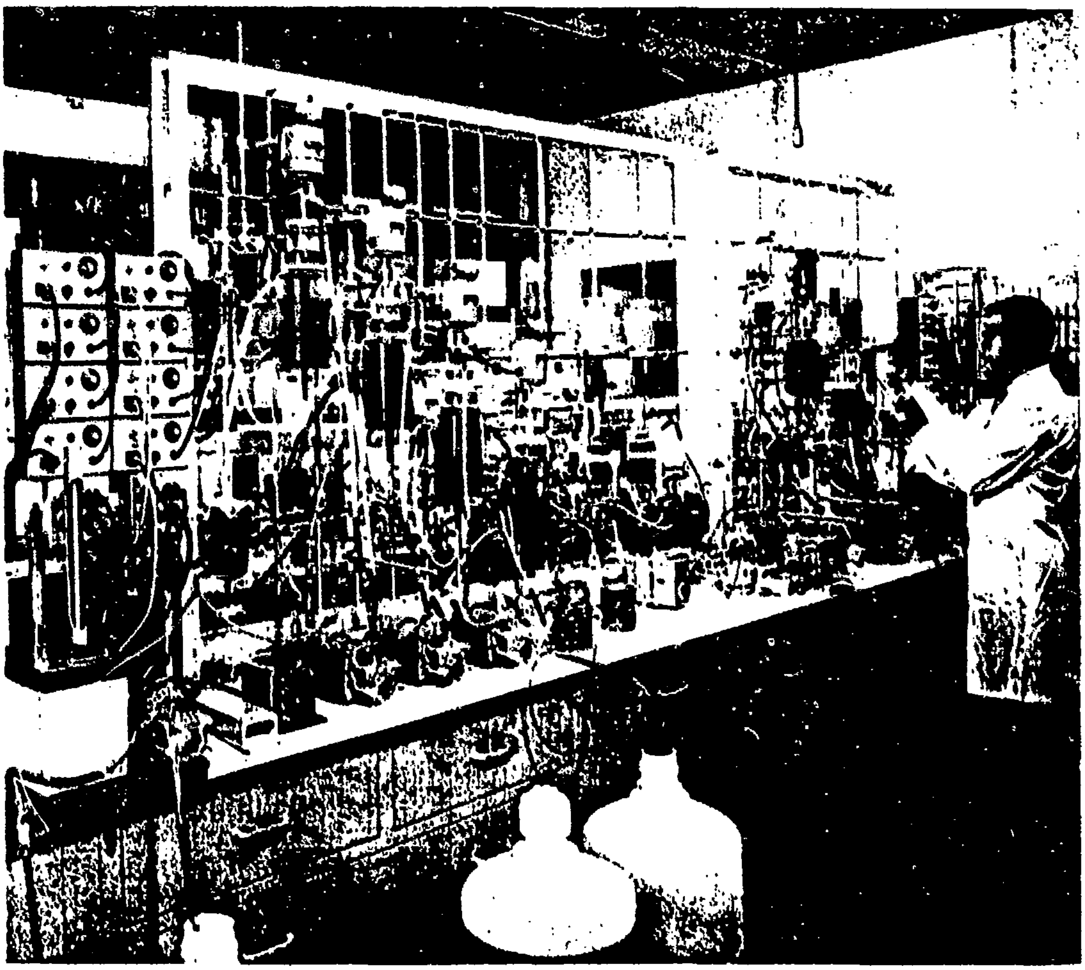
Oak Ridge, TN

Wet-process phosphoric acid contains a significant amount of uranium. This uranium totals more than 1,500 tons/yr in current U.S. output and is worth about $135 million. Projections put the uranium level at 8,000 tons/yr by the year 2000. Since the phosphoric acid is a major raw material for fertilizers, uranium finds its way into those products and is effectively lost as a resource, while adding to the amount of radioactive materials that can contaminate the food chain.

Both resource-conservation and environmental considerations make recovery of the uranium from phosphoric acid desirable. Making such recovery economic is the achievement of Oak Ridge National Laboratory (Oak Ridge, TN).

A solvent-extraction process for recovery of uranium from wet-process acid was commercialized briefly in the early 1950s. A number of drawbacks such as the instability of the process, a costly iron-reduction step, and a low quality uranium product made the process incapable of competing economically with recovery of uranium from Western U.S. deposits.

DEPA-TOPO processed uranium.



That is how the situation remained until Oak Ridge developed the DEPA-TOPA process, boasting costs competitive with those for winning uranium from Western ores.

Oak Ridge drew upon decades of working on recovery of metals by solvent extraction - during which time it had developed a wide variety of extraction reagents and processes for winning uranium from solutions.

After much extractant testing, Oak Ridge selected the combination of di (2 ethylhexyl) phosphoric acid (DEPA) and trioctylphosphine oxide (TOPO) as the most suitable. But, because this solvent has such strong uranium-extraction power, stripping the uranium conventionally via acid solutions is hard. And retrival of the uranium from the solutions would involve added complexities. The dilemma of how to remove the uranium from the DEPA-TOPO solvent was resolved when Oak Ridge developed a novel reductive-stripping method based on the use of the wet-process acid itself.

Use of the wet-process acid is inexpensive since the acid is not consumed and is returned to the raffinate (and subsequently can be used for fertilizer manufacture). Overall uranium recovery from phosphroric acid should run 90% or better.

Thanks to Oak Ridge's development of the DEPA-TOPO extraction process, a growing proportion of the uranium is being retrieved. Currently, four companies have five processing plants either operational or ready to come online shortly. When all these units are running, more than half of the uranium in U.S. wet-process phosphoric acid will be recovered.

SUPERABSORBENT DEVELOPED BY AGRICULTURE RESEARCH SERVICE

Peoria, IL

A recent shortage of absorbents has resulted in the increased demand for the price of cellulose, the main absorbing element in such items as disposable diapers, bandages and surgical sponges. However, Super Slurper, developed by scientists at the Northern Regional Research Center (NRRC), Peoria, IL, in the mid-1970s is filling the need for an absorbent that costs less, absorbs more and has little bulk.

Super Slurper is a starchbased superabsorbent capable of absorbing and retaining as much as 1000 times its own weight of water without dissolving. It transforms water into a soft gel.

In 1982, the NRRC industrial liason officer and NRRC scientists facilitated a transfer of the Super Slurper technology as it applies to filters. The first application of the Super Slurper product to filters was made by the Central Illinois Manufacturing Co., Bement, IL. Will Ayers, president of the Bement facilities, developed a method for impregnating fiberglass with the Super Slurper product and laminating the fiberglass to filter paper. The result is filter paper that is capable of absorbing water as well as filtering solids. With the superabsorbent filter paper, Ayers designed a filter called "Hydrosorb." It is especially suited for the filtering of aircraft and agricultural tractor fuels.

NRRC's Super Slurper has more than 50 potential applications in industry, agriculture and personal care.

Commercial application of Super Sluper.

[illegible]

7

NAVY COMPUTER ASSISTED LEARNING SCORES HIGH MARKS

San Diego, CA

Adult students are learning their lessons three times faster than students learning under typical classroom conditions, thanks to the Navy's Computer Assisted Instruction (CAI) technology.

One aspect of CAI, is a computer software learning program developed by Drs. Robert Wisher and Tom Duffy of the Navy Personnel Research and Development Center (NPRDC), San Diego, CA. The Wisher software was originally developed to train recruits in naval terminology and technical reading. The technique can also be used to educate and train students or personnel in vocabulary and reading comprehension in any content area.

The teaching effectiveness of the software was tested against that of a traditional classroom. A group of students spent five hours with a CAI computer, while students from another group spent 12 hours in classroom instruction. Computer-taught students mastered vocabulary three times faster than classroom-taught students. A week later, a retention test was given to both groups. The classroom-taught students' retention dropped by 18 percent, while the retention of the software program students dropped only 5 percent.

In the summer of 1982, the Wisher program was transferred to the San Diego Community College Adult and Continuing Education program, where it has been particularly useful for training students in English as a Second Language. The program is currently available state-wide through the Dissemination Network for Adult Educators sponsored by the California State Department of Education.

FEDERAL LABS PROVIDE TECHNICAL VOLUNTEER SERVICE

The Technical Volunteer Service (TVS) is directed at making the scientific and professional resources of the federal research laboratories more available to state and local governments and other users. Through the TVS, current and retired federal laboratory employees are provided the opportunity to volunteer their personal time and expertise to help solve problems in their communities.

The FLC is providing leadership in developing and implementing TVS programs at individual member laboratory facilities. Through a cooperative program with the Administration on Aging, the FLC is putting special emphasis on creating a mechanism geared to assuring the productive use of retired volunteers.

Everyone benefits from TVS. Local governments gain a technical competence that they might not otherwise be able to afford. Taxpayers receive a greater return on money spent in federal research and development as high technology practitioners give back time and talent to their communities. Through TVS, federal laboratories are able to become an integral part of their communities by adding valuable technical assistance to municipal operations. And finally, the volunteers gain personal satisfaction from working in their community.

Following the original Technical Volunteer Service, developed at the Naval Underwater Systems Center, New London, CT, four additional TVS Programs were established at FLC member laboratories: David W. Taylor Naval Ship Research and Development Center, Bethesda, MD; Lawrence Livermore National Laboratory, Livermore, CA; Los Alamos National Laboratory, Los Alamos, NM; and Naval Air Development Center, Warminster, PA. Numerous other federal laboratories are in the planning phases of establishing TVS programs.

LAB TVS PROJECT ENHANCES LIFE OF CEREBRAL PALSY VICTIM

Little Compton, RI

Linda Texceira is a bright, 26 year old from Little Compton, RI. She is also a victim of cerebral palsy. The affliction has left her with no ability to speak and has severly limited her ability to control her limbs. Thanks to the efforts of the Naval Underwater Systems Center (NUSC) TVS Volunteers Gerry Elias, Les Cory and others, Linda can now "talk".

Cory, with other volunteers' assistance, designed a computer system to help Linda communicate. They secured financial assistance from the local Rotary Club and The Rhode Island Air National Guard to purchase the necessary equipment to operate the system.

Linda is now able to communicate in messages up to 800 lines in length. Linda may choose from a vocabulary of 1,700 words, plus symbols, letters and phrases. A word processor program allows her to edit her messages and a speech synthesizer permits Linda to "talk". The computer is also equipped with a calculator, computer games and tutorials. Linda, in addition to her ability to communicate, can now control lights, operate appliances, and originate and receive phone calls. Currently, Linda operates the computer with a switch mounted between her knees. A method which would allow Linda to operate the computer with her eye movements is currently being explored.

With the entire system mounted on a wheelchair, Linda has increased mobility. As a result, she has been able to continue her education. She is currently attending classes at a local community college and receiving good grades. Her newfound exposure to many different people and ability to communicate have expanded her life. The NUSC-TVS and Volunteers, such as Les Cory, have made a difference.

TVS Volunteer Les Cory working with Linda Texceira and her new talking computer.

LABORATORY RETIRED VOLUNTEER SAVES COMMUNITY $150,000

New London, CT

Paul Misisco, a retired volunteer for the Naval Underwater Systems Center (NUSC) Technical Volunteer Service (TV3), has saved his community of Westerly, RI, $150,000 and more than 520 man hours in two years. He accomplished these savings by searching government surplus lists, and developed requests on behalf of Westerly for needed items. Goods purchased by the Federal government, which subsequently become excess to its needs, are made available to the states. Surplus lists are published monthly, and municipalities are authorized to make requests through their state representatives. So far, this process has provided Misisco's community with a variety of supplies such as lube oil, air conditioners, vehicles, pizza-makers, cameras, coffee pots, uniforms, serving carts, backpacks and office equipment.

The imagination and diligent work of this NUSC-TV3 volunteer has truly proved to be a valuable resource for his community.

Paul Misisco reviews government surplus lists.

SPINOFF FROM WEAPONS RESEARCH RESULTS IN REVOLUTIONARY INSULIN DELIVERY SYSTEM

Albuquerque, NM

An implantable, electronically controlled insulin pump, derived from weapons technology, has provided reliable insulin delivery when surgically implanted in diabetic patients. Convenient and simple for the patient to use, it is believed that the device will substantially reduce long-term complications of diabetes through better control of blood glucose.

The implantable insulin pumping system was developed jointly by Sandia National Laboratories, Albuquerque, NM, and the University of New Mexico School of Medicine. The basis of the device is a peristaltic pump driven by a rotary solenoid motor. With the new system, the physician is able to prescribe insulin dosage according to the needs of the patient. The patient is also able to program extra insulin dosages according to meal expectancy. Both the physician and the patient transmit this information to the implanted pump by way of a two-way communication link using an external programmer.

The advantage of the implanted pump over previously developed external insulin pumps is that the internal pump can provide insulin to a site similar to normal pancreatic delivery and, therefore, blood glucose and insulin levels more closely mimic the action of a normal pancreas. In addition to having more potential for reducing the debilitating side effects of diabetes, the internal pump also enables the user to lead a more normal life. Worry about protecting an external unit, infection, plus other human factors such as appearance, make the internal unit desirable. Children, especially, could benefit from an implanted insulin delivery system because it is not noticeable and does not restrict their activities.

The concept of variable delivery of drugs from an implanted system has potential medical implications beyond insulin delivery. For example, the technique is now under evaluation for chemotherapy use in cancer treatment, and the delivery of other life-sustaining drugs.

The value of this innovation has been identified by industry. The design specifications and research results are currently being transferred to a commercial firm.

Government D

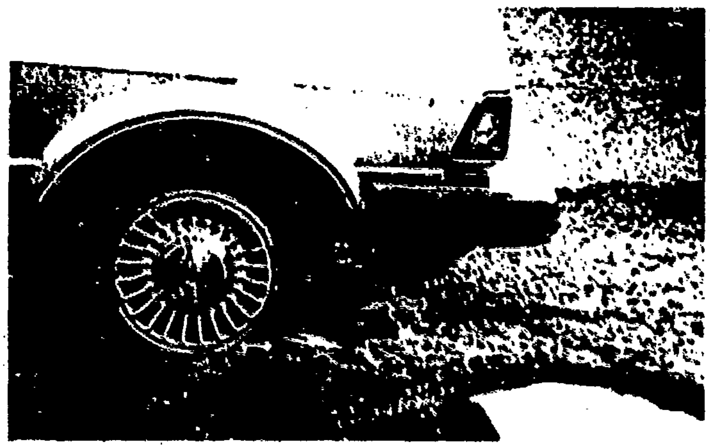
COMPUTER HELPS CUT COSTS IN REPAIRING "POT HOLES"

Champaign, IL

The U.S. is paved with deteriorating roads. Old pavement can increase user costs by extending travel time, increasing energy consumption and contributing to vehicle deterioration. Recently, many states and cities have not had sufficient funds for conducting accurate maintenance and repair surveys. A system developed by the Army's Construction Engineering Research Laboratory (CERL), Champaign, IL, can help. Pavement Maintenance Management System, PAVER, is a cost-cutting, completely automated, computerized maintenance management system which helps pavement engineers to conduct pavement inventories, establish condition ratings, determine maintenance and repair procedures and priorities, develop annual and long range work plans, and schedule inspections. PAVER was originally developed for air field and Army base pavement maintenance management. It was adapted for civilian use by the American Public Works Association (APWA), Chicago, IL.

Since PAVER requires a mainframe computer and a sophisticated, expensive software program, APWA has set up a time-sharing system for cities to access PAVER from a low-cost terminal. An APWA developed cost estimate for a system compatible with PAVER is from \$2,500 to \$5,000 for a terminal that allows a user to set up his own data base, \$300 for a modem (telephone hookup), and \$600 for a printer. A city's share of APWA's cost of operating the system will be from \$250 to \$1000 a year, depending on its population. In addition, the annual cost to a city for central computer-use time will be in the \$2,500 range.

PAVER is presently provided to over 36 cities across the U.S. and Canada through APWA, which will make PAVER available to any city requesting it.



11

ALICE — THROUGH THE LOOKING GLASS

ALICE-MAP READING COMPUTER

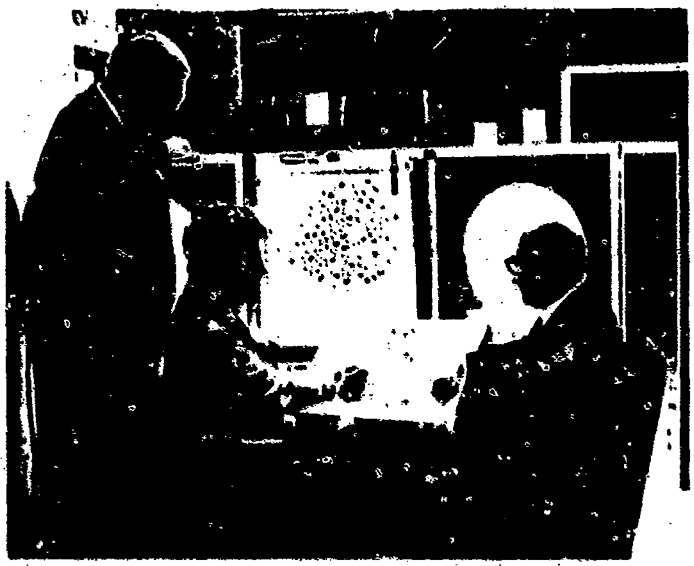
Argonne, IL

Argonne National Laboratory's ALICE didn't go through the looking glass, but she is doing some amazing things of her own these days. ALICE is a computer that can read maps and rapidly process visual information.

Thanks to ALICE, government agencies and counties throughout the United States are receiving more accurate information on such things as land elevation, soil conditions, agriculture, vegetation and air pollution. ALICE is also used to analyze land area for regional and city planning purposes by using data on soil type and porosity, agricultural limitations and recreation areas.

The Argonne system can accurately combine the information from two maps, read and analyze the information, store it and reproduce it in a variety of tabular and pictorial forms. ALICE can even draw maps that illustrate in color any desired aspect of the data.

Will County, IL, called on Argonne to computerize and calculate the land area of each soil type on individual land parcels in the county. "It would have taken one person three years to do by hand what ALICE did in about seven months," said Ken Mayes of the Will County Supervisor of Assessments Office. "Besides saving time and money, the information was as accurate as any in the state."



Exploring new applications of the ALICE System.

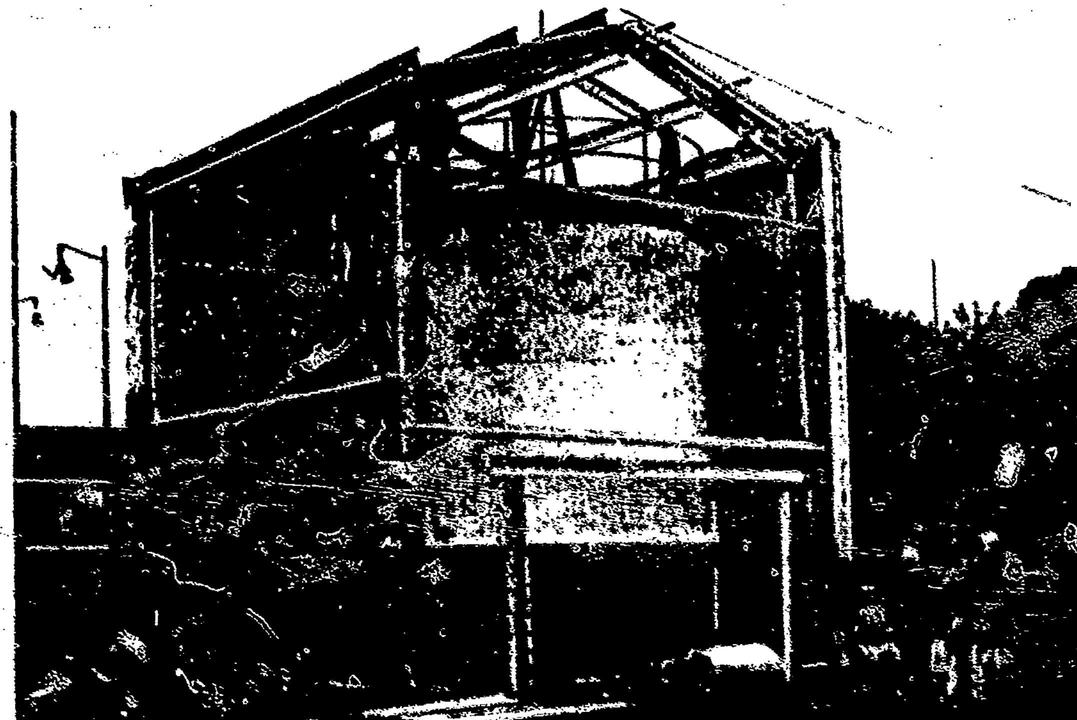
Other applications include: the analysis of air pollution data; computerizing mapped information according to distinctions in plant and animal species, landforms, soil conditions, types of vegetation and ecological state; the identification of soil slope conditions; and to depict soil limitations for agricultural uses.

Previous applications of the system have included identifying fingerprint characteristics and aiding biomedical research by counting the number of fibers in the human optic nerve.

Unlike Lewis Carroll's heroine, Argonne's ALICE has not been to a tea party with the Mad Hatter, however, she has contributed magic of her own to solve some of the problems of mere mortals.

FEDERAL LABORATORY CONSORTIUM

ANFLOW — WASTEWATER AND SEWAGE TO ENERGY



Construction of ANFLOW process facility.

Oak Ridge, TN

Nearly 200 gallons of wastewater are produced daily by the average American. Normally, treatment of such large amounts of wastewater is a costly task. However, a low cost, energy conserving process that uses microorganisms (bacteria) has been developed by Oak Ridge National Laboratory (ORNL), Oak Ridge, TN, in cooperation with the Norton Co., Akron, OH, and the city of Oak Ridge.

This process is called ANFLOW for its anaerobic, upflow, operation. ANFLOW is based on a biological fermentation process that uses bacteria to break down and consume pollutants in liquid wastes. The process takes place in an oxygen-free environment as sewage flows up through a treatment chamber. The bacteria attached to inert stationary packing materials in the chamber convert the waste into methane and carbon dioxide.

In order to transfer the ANFLOW process to the private sector, ORNL hired the Associated Water and Air Resources Engineers (AWARE), Nashville, TN, to evaluate the system's performance. A very significant finding was the difference in energy required to operate the ANFLOW process compared to the conventional activated sludge treatment system. The ANFLOW system required only about 30% of the energy needed to operate the conventional system. Further, the anaerobic fermentation process of the decaying carbonaceous wastes of ANFLOW is capable of producing a number of recoverable products in significant amounts, such as methane, acetic acid, butyl and ethyl alcohol, and food grade lactic acid. Enough potential energy is produced from the byproducts to completely offset the operating costs of anaerobic treatment.

The employment of ANFLOW's fixed-film system produces advantages over both aerobic and modern anaerobic processes. The applications of ORNL's ANFLOW process include vast industrial and municipal possibilities.

The Future

The need for the domestic technology transfer service provided through the FLC contributes to the maintenance of a healthy U.S. economy. The role of the FLC as an organizational entity may change in time, however, the FLC is designed to accommodate such change. The vital ingredient in the process is a continuing team effort between the federal laboratories and the public and private sector technology users. International trade and a healthy balance of payment are only two of the important national policy issues at stake.

The FLC will continue to take a leadership role in the improved utilization of the results of our federal research and development investment. Federal initiatives such as Public Law 96-480 and individual agency technology transfer regulations, provide us with expanded opportunities to exert a positive influence on our Nation's well being. Strategies will change with changing situations, however, the basic need for domestic technology transfer will remain, and the FLC will continue to respond to that need.

Federal Laboratory Consortium
FOR TECHNOLOGY TRANSFER

A SPECIAL THANK YOU

The material presented in this document is based upon information provided by FLC member laboratories. A special thank you is extended to the individual FLC Representatives from these laboratories for supplying both narrative information and pictures.

The FLC 1984

Federal Laboratory Consortium

CREDITS

FLC '84 was produced by DelaBarre & Associates
1945 N. Fine Ave., Ste. 109, Fresno, CA 93727
PH (209) 251-6079

Design/Production: Sharon DelaBarre
Steve DeLaTorre

VOLUNTARISM IN A WORLD TURNED UPSIDE DOWN

by

Dr. Eva Schindler-Rainman

Voluntarism will never be the same again! The world of the volunteer is changing dramatically and rapidly. We are at a very interesting point in time. We are living at a time of transition -- between the no longer, and the not yet --. It is not quite the way it was, and it is not quite the way we are told it is going to be. There are mini and maxi transitions. Mini, like going to work a new way because a street has been closed off, or transiting from being asleep to being awake, or vice versa. And then there are maxi transitions -- from work to retirement, from being a couple to being single, and many others. We are also witnessing transition in the usage of words. For instance in many circles "chairman" is a word you can no longer use. Language reflects societal and cultural changes. Language will continue to change, and people who are leaders will be called facilitators, conveners, and coordinators. As society changes, organizations will have to change, including structure change, changes in by-laws, and some will even study and then reorganize their objectives and missions.

What then are some of the specific kinds of changes, trends, pushes that affect the volunteer world at this transitional time?

1. We are moving from a stance of plenty to one of doing more and better with less. We have always thought we could meet most of the needs of people in our countries, and that we lived in societies of plenty. We are discovering this is not necessarily true anymore. We know we are short on all kinds of resources -- material and financial. We know we shall have to utilize human resources and services in new and creative ways. This

c LC News Items
September 1983
Issue #94

is a double bind, because at a time of more demands we must meet them better with less resources. This push affects the volunteer world in a variety of ways. It is providing some new roles for volunteers, and some new confrontations with staff persons who are not feeling as secure in their jobs as they once did. There is concern that as budgets are cut volunteers might replace or displace professional persons. Both unions and professional associations get upset, and rightfully so. This is one of the challenges of transition times.

2. We are moving from knowing our values, and being clear what they are, to a time of changing values. Let us look at how this trend affects the volunteer world. Here are five value changes that are particularly important for us:

   (a) We are moving from an emphasis on rootedness to a value on mobility; not only mobility from one job to another, but mobility in the way one lives one's life, mobility in lifestyles, in modes of transportation, and, of course, geographic mobility. We are more mobile, and this has a lot of implications for the volunteer world, such as: people are not around as much or as long, and therefore can't take on long volunteer assignments.

   (b) We are moving from a value on commitment which meant some kind of a long term association, to a value placed on temporariness. That is where the phrase "commitment for the moment" comes from. Surely this has implications for by-laws, for recruitment, and how we "sell" volunteer jobs. People are not available in the same ways they always were. This is a creative challenge for the volunteer world, because "99-year committee memberships" are not going to be very popular, nor are six-year board terms. The challenge is how to utilize human volunteer resources for shorter and more irregular periods of time. We shall have to find answers if we want to tap into new resources.

(c) We are also moving from a value of awe and respect for authority and of authority, to questioning and confronting authority. This is evident in the volunteer world for example that some volunteers say "nothing that you have to offer interests me", or they come to a volunteer centre stating: "What I want to do is ---". Volunteers have become much more demanding in terms of jobs, contracts training and environment.

(d) Another value change is reflected in that success has always meant upward mobility, or at least upward movement. Now, success means different things to different people, for example it may mean doing what you want to do when you want to do it. The president of a telephone company once told me that he could not figure out employees who are happy in what they are doing, and do not want to do anything else, especially if it means a promotion. He described some young people who liked the outdoor telephone work so much that they did not want to become managers, because it meant working in an office with all its restrictions as to clothing etc. This was hard to understand for a man in his late fifties, for whom success had always been an upward climb. We do have the same value change in the volunteer world. There are people who do not want to be on the Board of Directors, and who do not want to run for office. That is not where they feel comfortable and rewarded. So we must ask: What makes volunteering meaningful and attractive to prospective volunteers, satisfying and fun? What opportunities can be offered? Must potential board members be old and experienced? Maybe the newcomer has different and creative ideas and ought to be on a decision-making body. He or she might bring something quite new and refreshing to a group of people who are all molded and melded into the organization, and do all the "right things". Long service often narrows the outlook of the volunteer, and tradition may get in the way of change or movement.

(e) The last value change to be mentioned here is that we are moving from an era of conformity, or from an emphasis on conformity in our agencies and organizations, to an appreciation of the beauty of difference. We are beginning to realize that a good committee is one that has a menu of different people with different ideas, instead of like-minded people who come together to agree. We are also beginning to realize that any decision-making group is more productive and comes to wiser, more interesting, more creative conclusions if the texture of that group is one where people are different -- different ages, different opinions, different lifestyles, and from different backgrounds. It is too bad that most nominating committees in agencies are made up of like-minded people who choose nominees from people just like themselves, and whom they know best. It would be helpful to have these committees reflect the differences that you want to attract to your organization.

3. Another major push is <u>from few roles that most of us play to lives with multiple roles, that is multiple personal roles, multiple community professional and volunteer roles</u>, in fact, we wear a lot of different hats. Multiple roles also mean multiple loyalties. So a volunteer can give time and service in a variety of volunteer jobs in addition to work, community, and family commitments. We must learn to deal with people's multiple loyalties, rather than hoping for a commitment of all their available time. Multiple roles and loyalties may make us richer because we have more experiences to bring to our volunteer jobs.

4. Also, a transitional change is that <u>we are moving from organizational turfdom to interorganizational collaboration</u>. Indeed, turfdom is going out of style rapidly, being replaced with cooperative, collaborative modes of work. We need to meld

resources so that we have more available from which to choose, and this will enable us to utilize our dollars better. We are moving from turfdoms to a willingness not only to see what the other agency has, but to feeling that together we can do a better job. We can decrease overlaps and find some of the gaps that need filling. Some people are not being served by anybody. Single, unemployed men, for example, have a hard time finding services, and that is true particularly of single unemployed middle and upper-class men. We shall also move into some new collaborative patterns between the public, the voluntary, and the business sectors, because we shall need each other more in the present era of restraint.

5. We are moving away from a pattern of leadership of one person being the leader for a number of years or a lifetime. We are moving from the single leader concepts to shared leadership; There are groups and committees where every six months someone else offers to be the chairperson. It works well. For instance, there is a volunteer centre which has three co-presidents. They divide the chairing of meetings. They may all be present or not, but they take turns with the leadership responsibilities. They manage the business well, and the Executive Director finds it an interesting and challenging pattern. We certainly see the emergence of new patterns of leadership in the corporate workplace as well as in the volunteer workplace.

6. Lastly, we are moving from very little explicit concern about the quality of volunteer work life to great concern about the quality of volunteer work life. There will be written agreements or contracts between the volunteer and the agency, spelling out hours, training, insurance, meetings, supervision, support systems, etc. There will need to be consideration of enabling funds for parking or mileage, luncheons, training fees, baby sitters, and others. This is not payment for service, but rather money that enables people to volunteer. We do

believe in equal opportunity to volunteer. In an era of restraint many people will need this kind of financial assistance, or assistance in kind. Enabling fund development must be analyzed and developed for economically poor people, and for people who are on a limited budget. Also, the concern about the quality of volunteer work life requires developing written volunteer personnel policies. Here we can take the advice from the literature on humanizing the corporate workplace, such as W. Ouchi's book THEORY Z.[1]

So, now why is volunteering turned upside down? Because the rest of the world is changing rapidly, and the volunteer world is a part of these dynamics. Volunteers are no longer only middle-aged, middle-class, white ladies, and people who are economically able to volunteer. Volunteers include men and women, the young and the older, from all religious, racial, and ethnic backgrounds and lifestyles. In some instances we are boxed in in a variety of ways. For example there are still many well defined hierarchies in the volunteer world. By and large there are the right names on the left side of the stationery for members of the board. The visibility of volunteers is via the decision makers, yet often the most important persons are those who are giving the direct service, such as counselling, transporting, or reading to the blind.
We often think that we, in order to give the person the opportunity to volunteer, also have the right to require them to take training, and not only to require them to take training, but do it at a specific time and place also. Part of the upsidedownness is that we shall have to develop portable training at different times of the day and week. For example, there are 24-hour crisis lines which are a fairly recent development. Now people can volunteer at night, and over weekends, but some professionals have to be available to them. We are developing twenty-four hour cities, and volunteer opportunities and volunteer training will have to be available around the clock in many communities.

[1] Ouchi, William, Theory Z, How American Business Can Meet the Japanese challenge, Addison-Wesley Publishing Co., Reading, Mass., 1981.

In our upside down world more people are available to volunteer than ever before. We need to develop skills to tap into the resources of new populations. We must learn how to work with people who are different from us. There are newcomers to our shores, single men and women, handicapped persons, the very young and the very much older persons whom we can recruit if we develop ways to transport them, and to turn them on to exciting volunteer opportunities. For instance, there is the Geri-Teen Project, in which highschool teenagers provide the wheels, the transportation, for older citizens to do volunteer service. While driving they talk about the history of the town, and they do all kinds of interesting things when they get together. The cars are provided by a local car agency that encourages the young people to use the demonstrator models, and the Red Cross trains them to drive safely. This is a real collaborative model. There will also be new roles for volunteers, and new jobs. For instance in one youth group agency, adult youth group leaders were not available for weekly meetings September through June. So neighbourhood resources committees were developed. These committees were made up of adults who were interested in helping the young people in the organization once in awhile, but not every week. So, a schedule was worked out; somebody coordinated it, and a different adult was available every week for each of the youth groups in the neighbourhood, and it was found valuable for youth to have a variety of adult role models. The neighbourhood resources committee thus provided the adult leadership for the youth groups on a year around basis.

Kinds of Volunteers

There are or will be a wide variety of volunteer jobs and categories in addition to administrative and direct service volunteers.

1. The connector volunteer is the person whose major job is to connect potential clients with human service providers. We have directories of services in most communities, but often special orientation and education is needed to understand the directories. Some agencies are offering volunteers the opportunity to be the connectors to potential customers, clients, patients, members, and connecting them with the providers of the service.

2. Research volunteers are people who help with all kinds of community research in relation to needs and resources.

3. Cause or social action volunteers go and plead a cause, whether it is to provide treatment for parents who have abused their children, or to keep a rape centre going that has been defunded or underfunded. They may collect money or people to help the Heart Association or the Cancer Society. There are many people who are cause oriented and want to be involved in the action end of their causes.

Challenges to Meet Human Needs

What are the challenges? To meet human needs through volunteer opportunities, including transitioning needs, and the need to use one's skills and resources. This means that somebody has to take the trouble to find out what the potential volunteer's interests are beyond those that are already known. There is also the need to work for causes, or to further a cause in a small or large way; the need for creativity, may be the creativity of helping people uncork their potential, may be the creativity of flower arranging. People are creative in a variety of ways. There is also the need to be part of "we" rather than being a lonely I. Human beings are looking for humane human relationships. There is the need to give of oneself, of one's talents, or one's time, of one's caring.

We also need to have fun! We make such a chore out of life, and life does not need to be a series of chores. Volunteering might be the place where one can have more fun than anywhere else. Another need is to help make decisions and solve problems, and this is very important. Most of us need to be involved in those decisions and in the solving of those problems that affect us. Just think of how many boards make decisions for people without consulting them, and then they expect them to vote "yes", because the decisions are "good for them". The need to feel powerful or influential is also important, together with the need to make a difference somehow someplace.

Good, creative volunt . jobs can meet some of these needs in elegant, satisfying ways.

Possible Action Steps - Right Side Up!

What are some action steps we can take? We can review how and where volunteer energy is being tapped right now. We could brainstorm all the ways in which we could utilize volunteer energy to deliver our services in better, more humane, and perhaps in bigger ways. We could develop personal ways to recognize people's contributions. We could develop community-wide skill banks or human resource banks headquartered in volunteer centres. We could study our demography and make sure we are tapping into all of our populations in all sectors of our geographic community: culture, religion, recreation, education, health, business, social control, welfare, unions, politics, etc. We could look into developing written humane volunteer personnel policies, and get agencies and other employers to count volunteer experiences as part of the qualifications required for further education or jobs. Application blanks could reflect this interest, and give appropriate credit. We could design more participative and fun meetings and training events, and help people write their own job descriptions, instead

of handing them to people. Job descriptions need to be more realistic and dynamic with more ongoing, reciprocal feedback evaluation, review, and redesigning built in. At some meetings of professional people volunteers would have a great deal to offer, because they would look at the situation from their point of view.

We could develop more volunteer jobs to extend and humanize our services.

Some Guiding Concepts

We have the opportunity

- to involve rather than isolate
- to welcome difference rather than look for similarity of performance
- to act rather than re-act
- to celebrate steps of movement rather than worry about the gap between where we are and where we want to be
- to reward people when they have some success, small or large
- to plan rather than wing it
- to create rather than to depend only on the ways we have always done it - known as precedent management
- to understand resistance and apathy as a challenge rather than an insurmountable problem
- to be excited and puzzled, rather than concerned, depressed and overwhelmed.

Happier are we who are willing to dream dreams, and willing to take actions to make these dreams come true, and that is the springboard for the world turned upsidedown. We can turn it any way we want to, if we have the will to do so and the wit to act.

Bibliography

Ouchi, William, THEORY Z, HOW AMERICAN BUSINESS CAN MEET THE JAPANESE CHALLENGE, Addision-Wesley Publishing Co., Reading, Mass., 1981

Schindler-Rainman, Eva, and Ronald Lippitt, THE VOLUNTEER COMMUNITY: CREATIVE USE OF HUMAN RESOURCES, Second Edition, University Associates, San Diego, Cal. 1971

Schindler-Rainman, Eva, and Ronald Lippitt, BUILDING THE COLLABORATIVE COMMUNITY, MOBILIZING CITIZENS FOR ACTION, University of California Extension, Riverside, Cal., 1980

Yankelovich, Daniel, NEW RULES, SEARCHING FOR SELF-FULFILLMENT IN A WORLD TURNED UPSIDE DOWN, Random House, New York, N.Y. 1981

APPENDIX D

T^2 LINKER CONCEPT ARTICLE

1. THE LINKER ROLE IN THE TECHNOLOGY TRANSFER PROCESS

by

M. E. Essoglou

Assistant Commander for Research and Development, Plans and Programs Division, Naval Facilities Engineering Command Headquarters, Washington, D.C.

This morning we hope to tell you why the Naval Facilities Engineering Command (NAVFAC) embarked on the series of studies and other efforts bearing on the subject of technology transfer. We have also included in our program today one case history of a specific technology transfer event. However, the main thrust of our presentations is essentially intended to tell you what we have done in terms of organizational considerations, behavioral considerations and the kinds of things that really constitute the technology transfer problem.

Before discussing my main topic, I feel it is necessary to give you a brief chronology of certain events that the Assistant Commander for Research and Development of the Naval Facilities Engineering Command has been essentially responsible for since about 1962. Those of you familiar with the literature on technology transfer will see that there is some correlation between the distribution of various books and papers on the subject of technology transfer and the apparent timing of our management actions as reflected in the dates shown in Figure 1–1. This figure shows that in addition to sponsoring studies at the Naval Postgraduate School (NPS), we have taken a number of other actions, partially as a result of the guidance indicated from the NPS studies and partially from our own knowledge and reading of the general literature and our intuitive perception of what we thought we should be doing to enhance technology transfer in the NAVFAC family of organizations. I would like to point out that these events indicate an awareness of technology transfer as a conscious type activity as opposed to the more random, traditional technological diffusion. Our awareness that people, and people to people type contact, is the way to solve most of these problems as opposed to the more formal bureaucratic type approaches, is also reflected by some of our actions shown in Figure 1–1.

1. RDT&E Assistance (1962)
2. RDT&E Utilization (1964)
3. Mandatory Task Proposals (1965)
4. Technology Transfer (1966)
   A. Applications Division
   B. RDT&E Liaison at Field Level
   C. NASA and Other Programs
5. CEL Report Utilization
   A. Naval Postgraduate School (NPS) (1967–70)
6. NPS Technology Transfer Study (1970)
7. CEL Field Engineering Support Office (1971)
8. RDT&E Assistance Doubles— $100 to 200 K (1971)
9. CEL/NAVFAC Workshop (1972, 1974)

Figure 1–1 Chronology of NAVFAC'S Technology Transfer

Let me explain what we mean by RDT&E assistance and RDT&E utilization. The user is generally a man in one of our field offices. These users of our technology have always felt that the Civil Engineering Laboratory (CEL) never quite solved the problem of a given research task fast enough to make the results useful for his operating needs. Therefore, to make laboratory expertise readily available, we set up the RDT&E Assistance Program by setting some money aside for laboratory personnel to answer, on short notice, questions raised by the field. The RDT&E Utilization Program refers to efforts in our Headquarters such as the establishment of a division responsible for the utilization of the research output of the laboratory. This program was a Headquarters function whose mode of operation was primarily through administrative tools like instructions, memoranda, etc.

Notice that while it focused on the problem, its separateness from the "people agents" in the producer-user dialogue provided the seeds for its failure and discontinuance by 1966.

We went through a phase about 1965, where it was clearly recognized that if the customers had input in formulating the research program the odds were that the output would be utilized more readily. We went through a typical bureaucratic routine where we required all field activities to submit a minimum number of proposals per year. Well, needless to say, that did not work, because we immediately were swamped with proposals and had to screen out most of them and show that they were not worthy of pursuit.

Awareness of technology transfer in NAVFAC, as far as I can determine, dates back to 1966. A number of independent initiatives relating to technology transfer took place in 1966. As history of technological innovation amply documents, technology transfer and innovations usually happen when several people in an organization, or even far apart, exposed to various ideas in their own spheres of the operation tend to converge on the same idea or development. As it is also well known, innovation needs a champion during its early infancy stages. For example, the Applications Division was established in the office of R&D at the direction of the "boss", a Rear Admiral who was at that time Deputy Commander for Acquisition where R&D is located.

The RDT&E liaison effort at the field level, on Figure 1-1, is something for which I have to take the blame. During the R&D Utilization era we were concerned with the vertical flow of information that came in from our Laboratory, and getting it into the Command's business. The mainstream of NAVFAC's business is writing specifications for procurement of various items that are constructed or manufactured. R&D utilization activity was essentially confined in the Headquarters. More than three-fourths of the engineers in the NAVFAC organization are located in the Field Divisions, i.e., Philadelphia, Norfolk, Charleston, San Bruno, and Pearl Harbor. It was apparent that the organization was literally cut out of the process of introducing new technology. A new technology or idea had to go from the laboratory to the Washington level, and from the Washington level it had to be promulgated out to the field. We all know that it is the man in the field who feels the pain of unsolved technical problems and has the need to implement an innovative and promising solution. It is not so for the bureaucrat in Washington who for many good reasons acts as a stabilizing agent in promulgating and maintaining policies. Through the establishment of the RDT&E Liaison Officer, at each one of our Field Divisions we felt that we would by-pass some of the inevitable though unconscious barriers that the Washington Headquarters interpose. In brief, we felt that since we operate mainly as a decentralized organization, why not let the R&D program planning and utilization go somewhat decentralized. Other advantages that the R&D Liaison Program had over the old Utilization Division were: (a) fostering a mechanism of inter-field division transfer of innovative solutions generated in the field, and (b) eliminating Headquarters jealousy as to who should be in charge of the utilization business, R&D or Engineering.

In 1967 one of our Assistant Commanders became quite sensitive to the problem of unused technology and directed our Laboratory to undertake a conscious effort to determine to what extent technical reports were being utilized. The Laboratory turned to the Naval Postgraduate School in the 1967–1969 period. Most of the Postgraduate School effort did not start however until 1970. Again to use a phrase that has appeared in the literature "every invention needs a champion". In the Navy you need aggressive and innovative people to champion new ideas and approaches. Around 1970 we were fortunate enough to have such a person in the Assistant Commander for Research and Development. He felt that we should initiate a "research on research" effort at the Naval Postgraduate

School directed towards NAVFAC's needs. In 1971, the new Commanding Officer of the Naval Civil Engineering Laboratory noticed that while we had made provisions to deal with this transfer problem in Headquarters and at the Field activities, in his own laboratory he could not find a focal point. As a result, he established the Field Engineering Support Office (FESO) whose sole purpose was to see that the customers in the field were satisfied and got the information they requested in a timely manner. This focal point in CEL now serves as a "linker" or a "gatekeeper". (Gene Early, who has headed that office, will elaborate on this in another paper.) Since answering questions does take time, and the mode of industrial funding of Navy laboratories does not allow a man to take time from his assigned tasks unless he has something to charge that time against, it became evident that specific resources available at the Laboratory to make quick advice possible had to be increased. The earmarked RDT&E Assistance fund was then doubled.

In 1972, and again in 1974, we pulled together the entire NAVFAC community of people working on technology transfer, i.e., Civil Engineering Laboratory personnel, the RDT&E Liaison Officers from our Field Divisions, Headquarters personnel, and the Naval Postgraduate researchers. We held workshops exchanging views, experiences and frustrations.

This is a thumbnail sketch of why and how we got where we are today.

The Postgraduate School Studies

Figure 1-2 shows the studies that have been carried out by the Naval Postgraduate School (NPS). In my talk this morning, I will concentrate on the work done on the two particular studies which we feel are really the mainstream of the NPS work. These are: ENHANCEMENT OF RESEARCH AND DEVELOPMENT OUTPUT UTILIZATION EFFICIENCIES: LINKER CONCEPT METHODOLOGY IN THE TECHNOLOGY TRANSFER PROCESS, by J. W. Creighton, J. A. Jolly, S. A. Denning, 30 June 1972 and TECHNOLOGY TRANSFER AND UTILIZATION METHODOLOGY: FURTHER ANALYSIS OF THE LINKER CONCEPT, by J. A. Jolly, J. W. Creighton, 30 June 1974. We went to NPS for this work because it became apparent that our prior approaches to technology transfer problems lacked the skill of the kind of people who are trained in behavioral science. By seeking the assistance of the School of Operations Research and Administrative Science at the Naval Postgraduate School, we would get the people whose background and training would allow them to attack our problem from a point of view slightly different from that of the typical "physical science" oriented engineer. Further we reasoned that since these people were essentially in an in-house Navy graduate school, with familiarity of the Navy system, we could get more for our money. They, more than any other faculty, might have a better feeling for the kind of organization and the kind of person we have in the Navy Department. Yet another reason for going to the Naval Postgraduate School was the fact that the Navy sends several hundred Naval officers (not only Civil Engineer Corps) through this school every year, and the mere exposure of these graduate student officers to the problems and concepts of technology transfer would have a rapidly multiplying beneficial effect when they would return to the Fleet, Washington or other field activities throughout the Navy. As we look at our results, I am personally inclined to feel that the exposure of several hundred officers a year to technology transfer topics, issues, readings, and projects has sensitized these people to this particular issue. If nothing else comes from this research, this training value alone will bring payoff to the Navy in the years to come in ways that we may never be able to trace. Last, but not least, doing business with NPS is

bound to have benefits resulting from the accumulation of studies. The result is the development of an in-house Navy cadre of expertise in this area.

1. *UTILIZATION OF CEL TECHNICAL REPORTS*, Naval Postgraduate School, 1969.
2. *DISTRIBUTION OF CEL TECHNICAL REPORTS*, Naval Postgraduate School, 1970
3. *ENHANCEMENT OF RESEARCH AND DEVELOPMENT OUTPUT UTILIZATION EFFICIENCIES: LINKER CONCEPT METHODOLOGY IN THE TECHNOLOGY TRANSFER PROCESS*. Naval Postgraduate School, NPS-55CF72061A, June 1972 (AD 756-694)
4. *FESO PROJECT EFFECTIVENESS PROFILE. SUMMARY AND ANALYSIS OF 1972 QUESTIONNAIRE RESULTS*, October 1973
5. *TECHNOLOGY TRANSFER AND UTILIZATION METHODOLOGY: FURTHER ANALYSIS OF THE LINKER CONCEPT*. Naval Postgraduate School, NPS-55J074061, June 1974 (AD A003-867)
6. *FESO PROJECT EFFECTIVENESS PROFILE: SUMMARY AND ANALYSIS OF 1973 QUESTIONNAIRE RESULTS*, September 1974
7. *INVESTIGATION OF INSTITUTIONAL AND BEHAVIORAL BARRIERS TO TECHNOLOGY FLOW AND UTILIZATION*, December 1974
8. *AN EVALUATION OF THE EFFECTIVENESS OF A RESEARCH ORGANIZATION'S MECHANISM FOR TRANSFERRING TECHNICAL INFORMATION TO APPLIED END USE*. Naval Postgraduate School, 55J074121, December 1974 (AD A003-501)
9. *THE POWER LINE DISTURBANCE MONITOR: A CASE STUDY OF THE NAVY'S CONTINUING EFFORTS IN THE FIELD OF TECHNOLOGY TRANSFER*. Naval Postgraduate School, NPS 55J075031

Figure 1–2 NAVFAC Technology Transfer Studies by the Naval Postgraduate School

Having provided the background history of NAVFAC's involvement, now let's look at the results of our studies. Technology transfer takes place when there is a source, a transfer mechanism of some sort, and utilization of the knowledge (Figure 1–3). The process may be quite complex but in the simplest sense this is what we are talking about. I would like to point out that this model, Figure 1–3, is essentially true whether we are talking about the vertical flow of technology, i.e., from a laboratory to a given application, in a given discipline, or the horizontal transfer of technology, as from one industry or activity to another. In all cases the source must emit a signal which the user must then receive and respond to it. It can then be said that technology transfer has occurred.

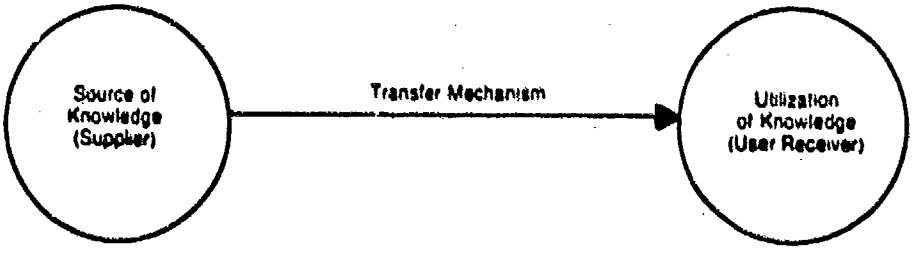


Figure 1–3 A Simple Technology Transfer Model

The "linker" model was developed by Professors Jolly and Creighton and LTJG S. A. Denning, who was then a student. The elements in the linker model are shown in Figure 1–4. The model essentially says that all of these factors affect the transfer mechanism. Now, if we knew how and how much these factors affected the transfer mechanism in a given organizational situation, we could modify them by direct management action based on fact rather than intuition or guess. Needless to say, quantifying this particular model has not been done. It is a tough job to do, and whether it will ever be done is questionable. In any case, this

model serves as a very useful conceptual framework around which we can organize our thinking and approaches to the problem. I would like to briefly describe the elements of this model.

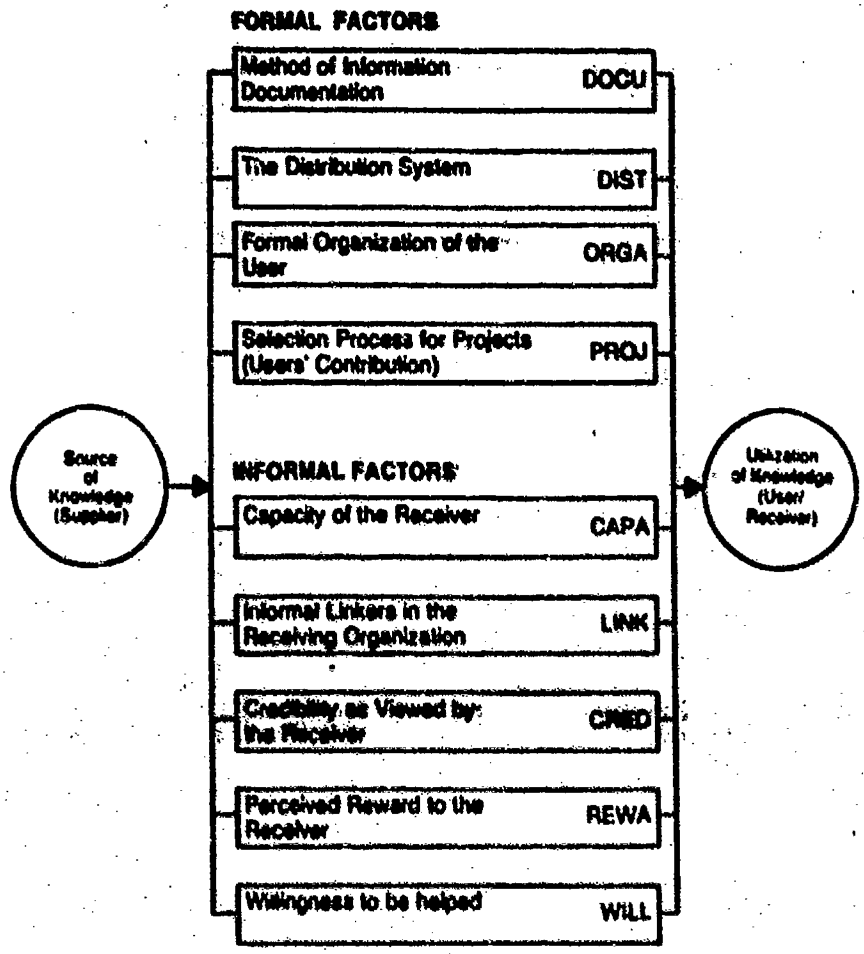


FIGURE 1-4 The Information Linker Model

Documentation is a factor in the transfer of technology. Very simply we are talking about the format, the organization, the language. Does the laboratory write a report that can only be understood by people in another similar laboratory, or does it write a report that can be understood by a practicing engineer?

Distribution deals with the physical channels used to distribute the information—the entry, the exit, the plan, redundancy. This is perhaps the easiest to measure or appraise.

Organization plays a very important part in determining how the technology is going to get transferred, if at all. The power structure, the nature of the business, the management style, resources, attitudes, bureaucratic tendencies, and state of equilibrium. These kinds of things need to be measured or appraised, if we are to quantify this factor called organization, obviously the prospects for success are difficult.

Project selection. This factor concerns who initiates the project, who approves, who authorizes, who monitors, and who is consulted about the project. Project selection is very critical in the ultimate utilization of research. One tends to utilize that which he helps develop.

Professor Jolly has seen fit to divide these factors into formal and informal as shown in Figure 1-5. Formal factors are things we can lay our hands on, the kinds of things we can operate on fairly directly. They are really system oriented. The informal factors are highly behavioral and sociological and therefore quite tough to handle. This is perhaps one of the reasons why the Federal Government has concerned itself mainly with formal documentation, storage, and distribution assistance, like the Defense Documentation Center and has ignored the informal factors. This observation, I believe, was made by Samuel Doctors in his 1969 book "The Role of Federal Agencies in Technology Transfer". It would seem that if reports and papers were available on the desks of the engineers and scientists, technology would be transferred. This is not the case. We must recognize

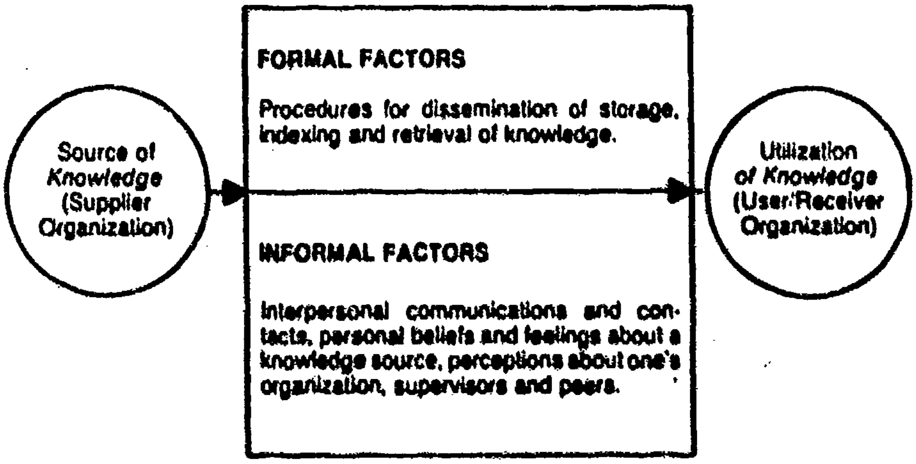


FIGURE 1-5 Knowledge flow enhancement factors divided according to formal vs informal.

that the problem has two dimensions. One that is fairly manageable is the question of storage and distribution of technical information through various information systems. It is a relatively straight forward problem, however complex. The second dimension is the set of items called "informal factors", which deals with perceptions. It gets quite a bit more complicated when trying to manage such a set of factors because its science base is primarily behavioral rather than physical. Let's now look at these "informal" factors.

Capacity refers to characteristics of individuals in the user organization that are described by terms like venturesomeness, wealth, power, education, experience, age, self-confidence, etc. Obviously these characteristics are vague and difficult to translate into quantifiable variables for analysis or design purposes. Yet they are very important in the transfer process.

The *linker* is essentially the individual or group of individuals who does exactly what the term implies. It is probably the single most important factor. They link the source and the application. Linker is a term that Professors Creighton and Jolly use in their research. The literature shows other somewhat similar terms in use by various other research teams.

Credibility of the source is obviously an essential factor. Certainly if the "would-be" user does not believe the message he is getting, he will reject it. The information that is being transferred must therefore emanate from a source that is at least credible according to the perception of the recipient or the potential user. The *rewards* (and penalties) for the consequences of applying technology that is "new" to the receiving organization imposed by management are crucial. Namely, if a man is to get penalized more than rewarded, he will most certainly be disinclined to import a new piece of technology idea, or approach that which is "untried" within his particular organization.

Willingness simply is the fact that a man who is going to make use of a piece of technical information must be willing to receive the message and must be willing to implement it. It is that simple, and that subjective. Obviously a number of things could affect a man's willingness.

Of all the elements in the linker model, the *linker* element was chosen for study because it seemed to focus on people most directly. From other similar research reported in the literature, it was established that the human factor is probably the most important element in technology transfer.

The linker is associated with the source, or with the user, or he could be somewhere in between, or linkers could be at both ends (see Figure 1-6). Professors Creighton and Jolly (and the literature) are inclined to feel that the linker is more appropriately a member of the user team. I tend to place the linker in the middle because he is not an individual, he is the synergistic effect of all the people in the communicating chain from transmitter to receiver. All of these people in

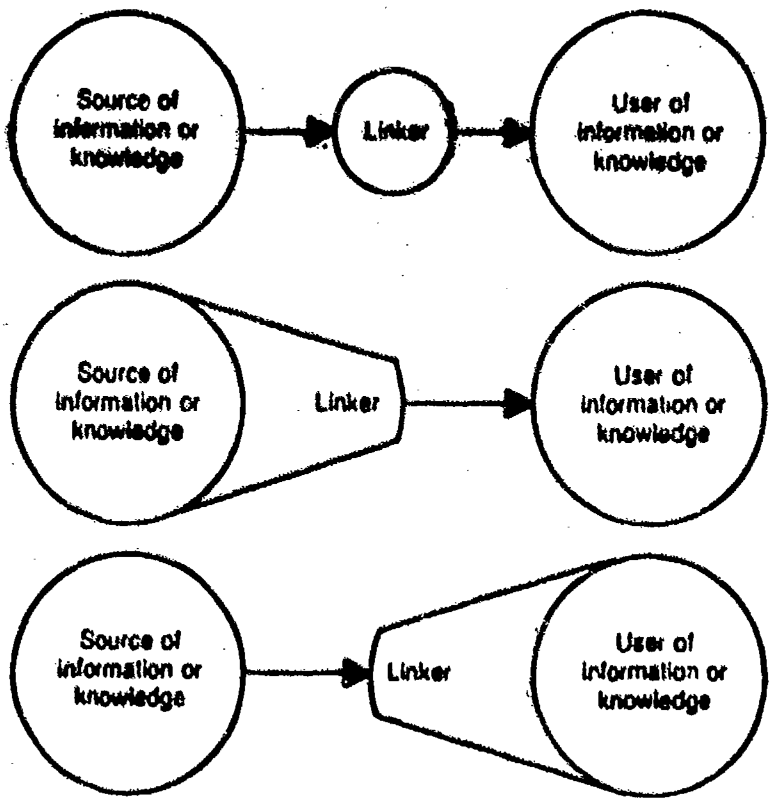


FIGURE 1-6 Linker Positions in the Flow of Knowledge

their respective contacts must link. Linkage occurs when mutual excitation between two individuals occurs because their values match at least for the particular technology transfer event. Indeed if the linker is at the user end and he enjoys the confidence of the would-be using team, he can operate internally in the organization to get the idea implemented or used.

At the beginning when I spoke of the chronology of NAVFAC's technology transfer efforts, I mentioned the establishment of the Field Engineering Support Office (FESO), in the Civil Engineering Laboratory. This was a conscious bureaucratic act to establish a visible, and at least a formal, linker at the Laboratory or the source. The establishment of Liaison Officers at the Engineering Field Divisions was similarly a conscious act to formally designate linkers at the Field Divisions, the user organizations. Whether these people are in fact effective linkers as the literature described linkers is a different matter; we don't know. Conceivably we could study them. The point is that these formally designated linker jobs were not necessarily filled with "linker type" people. The qualities of the linker are listed on Figure 1-7. At the time these jobs were filled there were very few, essentially intuitive, criteria in judging the potential linker attributes of the individuals selected for the Liaison and FESO positions. You all know the typical recruitment process we go through in the government. Furthermore, in filling these jobs, selection was limited to available people. In some cases there was no selection in terms of individuals, but rather only in terms of organizational convenience. In any case it is difficult to select people who will link. If you succeed, it is an accident as much as it is design.

INNOVATIVE, WILLING TO ACCEPT RISK, ACTIVE IN MULTI-DISCIPLINES, MORE INFORMATION CONTACTS, HIGH CREDIBILITY WITH PEERS, COSMOPOLITE, ORIENTED TOWARDS OUTSIDE INFORMATION SOURCES.

FIGURE 1-7 Attributes of Linkers

GREAT MAN (GLOCK AND MENZEL 1958)
SCIENTIFIC TROUBADOR (MENZEL 1964, HODGES AND NELSON 1965)
INTERNAL CONSULTANT (ALLEN et al 1968)
TECHNOLOGICAL GATE KEEPER (ALLEN 1966)
OPINION LEADER (LAZARSFELD 1948, KATZ 1957)

FIGURE 1-8 Writings on Aspects of the Linker Concept

The linker concept is not particularly original in that many authors have, in a sense, touched upon the notion of the linker from time to time in their works (see Figure 1-8). What is new in the work done at the Naval Postgraduate School is that all these terms and definitions are recognized as subsets within a universal linker set.

In order to get on with the job of approaching quantification of the linker model, it was decided to survey first the Navy's officer sector in charge of NAVFAC and its Field activities. This was done using a questionnaire (Appendix A) designed to measure whether a person in a given situation would be inclined to function as a linker or the opposite, a stabilizer. Would he be innovative? Would he be prone to accept the risks that would go with the acceptance and application of a new idea? Would he be a person with a high number of sources of information at his disposal? Would he be acquainted in many areas? We could not go around and interview 1,700 people, so we had to design a fairly clever questionnaire. The answer to any one question does not indicate that a man is a linker or a stabilizer.

It is the answers to a number of questions and combinations of questions that would cause us to categorize one man a linker, and another man a stabilizer. Initially we tried to determine who the linkers and stabilizers were among the Civil Engineer Corps Officers.* After seeing the distributions of the results, we wondered what the distribution of linkers versus stabilizers would be for civilians GS-8 and above. The results are shown in Figures 1-9, 1-10A and 1-10B. On the basis of the questionnaires and distributions between officers and civilians on the linker-stabilizer scale, we cannot say that civilians are more prone to be linkers than officers or the other way around.

1972 1726 NAVAL OFFICERS
(CIVIL ENGINEER CORPS ONLY)
(65% RESPONSE)

1973 2954/4464 GS-8 to GS-16 NAVFAC
CIVILIANS (54% RESPONSE)

.... NOT POSSIBLE TO DISTINGUISH BETWEEN THE TWO POPULATIONS (CLASSEN 1973)

.... THE LINKER-STABILIZER BEHAVIOR CHARACTERISTIC HAS A GENERAL BASE IN TERMS OF TECHNICALLY TRAINED PERSONNEL AND IS NOT UNIQUE TO A SELECT POPULATION

FIGURE 1-9 The Officers and Civilians Participating in the Linker-Stabilizer Survey

An examination of the data from these questionnaires reveals three questions the answers to which suggest that in some ways Naval Officers and civilians behave somewhat differently (Figure 1-11). Naval officers seem to attend fewer professional meetings and one can perhaps understand that because their mobility prevents their becoming established. They depend heavily on literature. For instance, when you are in charge of construction contracts one day, the next day you move into a design division, and two years later you move into a staff position, you are changing quite rapidly. Following literature rather than the professional community contacts becomes more logical and easier. On the other hand the civilian is more inclined to use his personal experience. The civilian tends to stay for a number of years, provides continuity in the organization and can draw from the problems he had several years ago in developing answers to new situations. Figure 1-11 shows that civilians tend to center interests with their fellow workers whereas officers more often center interests with people doing similar work.

I can only urge the interested reader to obtain a copy of the thesis and see the extent to which results of that work could be applied to your organization. It is emphatically stated that we did not do this survey or cross section in order that officers and civilians would be labeled as linkers or stabilizers and then keep them in or out of certain jobs. Although we know who the linkers and the stabilizers are, we do not know how to integrate that information with all the other do's and

*The Civil Engineering Corps is comprised of Naval Staff Officers primarily responsible for the construction and maintenance of Naval Shore Facilities world-wide.

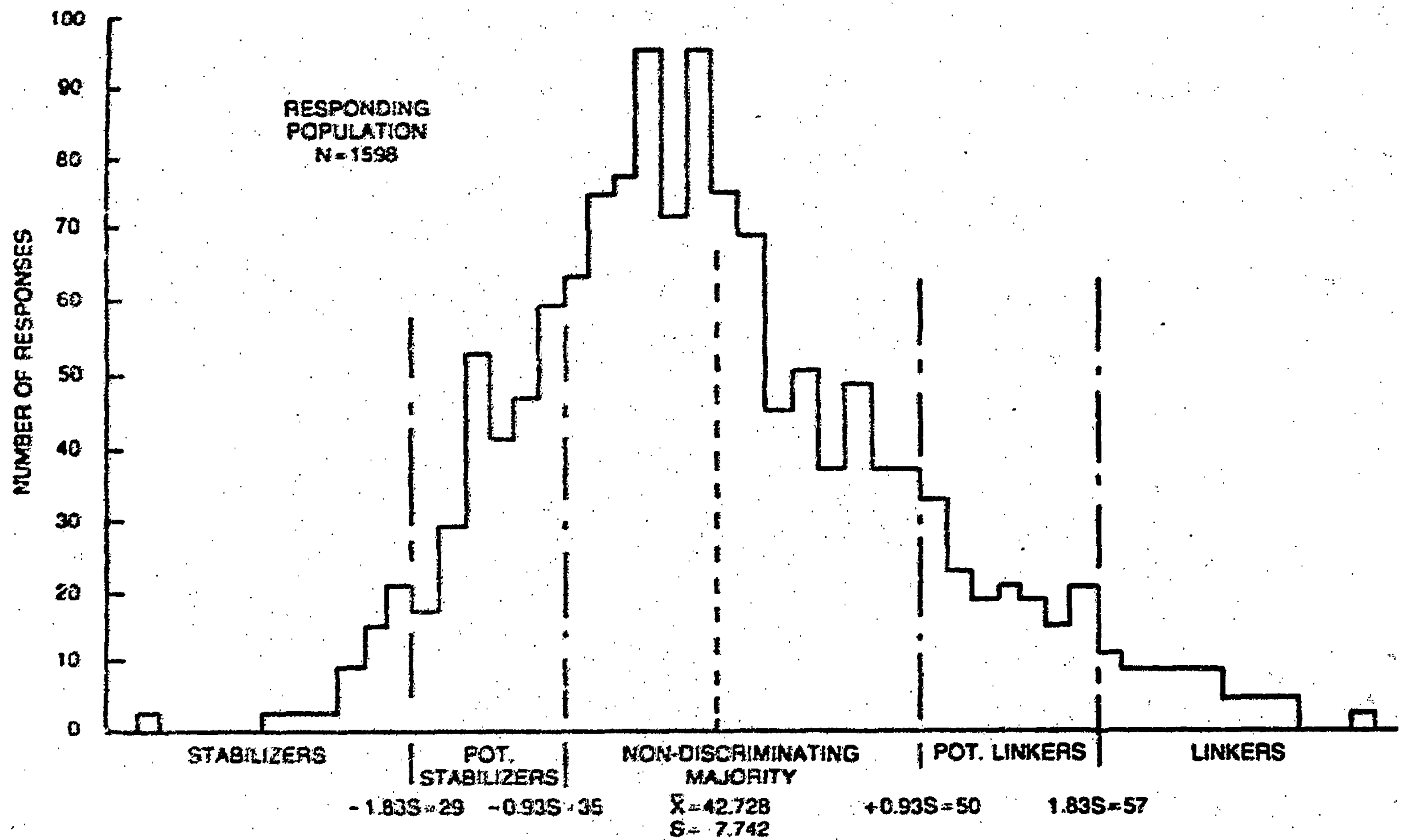


Figure 1-10A. A distribution of the scores of the Government Service employees in response to the questionnaire which was intended to measure the magnitude of their stabilizer-linker traits.

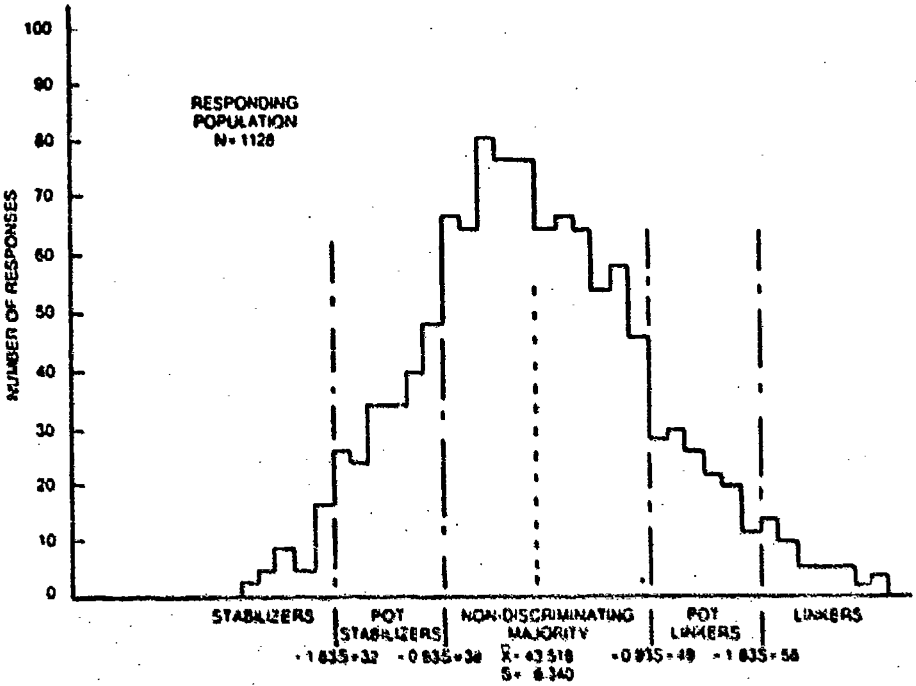


Figure 1-10B A distribution of the scores of the Naval Officer Civil Engineers in response to the questionnaire which was intended to measure the magnitude of their Stabilizer-Linker traits.

don'ts of job selection. I want to make it very clear that we have no designs at this time to start shifting people around because they are linkers or stabilizers. The nature of the data is experimental and complex problems arise in satisfying personnel and organizational goals. There is no basis to even suggest personnel reassignment at this time—perhaps in the future when our total study is completed and accepted by management as a basis for selection.

I have rearranged the basic linker model (Figure 1-12), to facilitate my telling you what we have done in NAVFAC to promote technology transfer:

1. *Selection of projects*—we have stepped up our efforts to make use of our Field Liaison RDT&E people in letting us know in Headquarters what the

---

OFFICERS BEHAVE DIFFERENTLY FROM CIVILIANS BY:

ATTENDING FEWER PROFESSIONAL MEETINGS
DEPEND MORE HEAVILY ON LITERATURE
CENTERING INTERESTS WITH PEOPLE DOING SIMILAR WORK

CIVILIANS BEHAVE DIFFERENTLY FROM OFFICERS BY:

ATTENDING MORE PROFESSIONAL MEETINGS
USING PERSONAL EXPERIENCE MORE OFTEN
CENTERING INTERESTS WITH FELLOW WORKERS

FIGURE 1-11

Characteristics that are different between Naval Officer Civil Engineers and Government Service Employee Civil Engineers

---

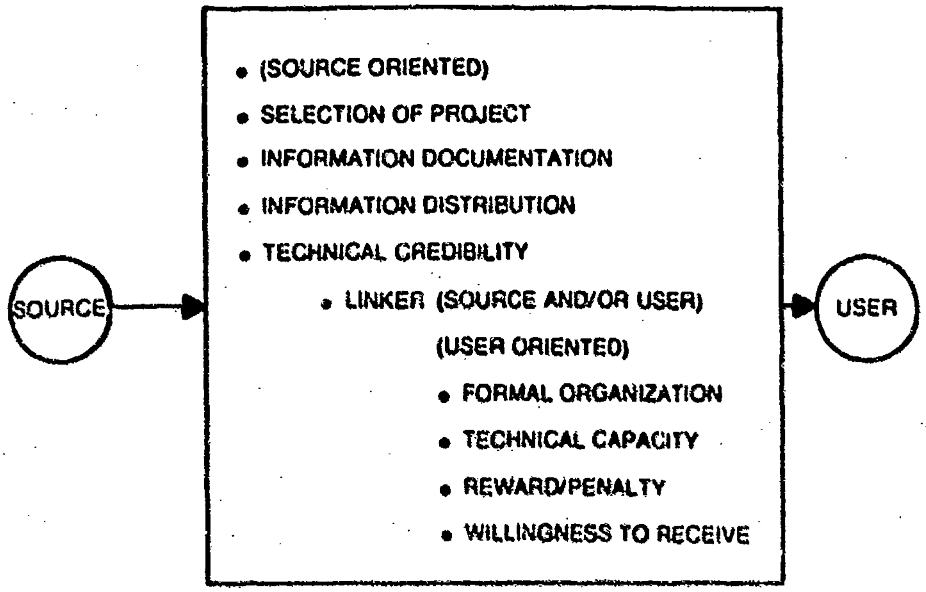


FIGURE 1–12 Activities Applied to the Basic Linker Model

field perceived R&D needs are, and what research projects they want funded.

2. *Information documentation*—in addition to technical reports the laboratory now puts out several additional types of publications that are readable and more responsive to the non-research practicing engineer and maintenance personnel. These are one or two page briefs of significant technical accomplishments (Tech Data Sheets) and periodic status reporting of work still in progress. (RAP Briefs). Also pictorial-graphic brochures are more widely used. Communication awareness seems to be spreading among researchers and management at last!

3. *Information distribution*—Distribution lists tend to go out of date quite rapidly and must be constantly maintained. An organization can be saturated with a lot of literature that is not needed for its particular mission. Economizing by avoiding the fine tuning of distribution lists for specific technological output tends to prevent effective distribution. Attempting to keep distribution lists up to date is a continuing job. Distribution is also directed to individuals and not merely to "desks".

4. *Technical credibility*—Frankly, we do not have a very good way of knowing whether recent technology transfer activities have caused the technical credibility of our laboratory, as perceived by the man in the field, to go up or down. I could speculate and say, "yes, I think it has gone up." When I do this I am not being true to empiricism and the purpose of having NPS do research on our research. We want to generate a certain amount of hard data in order that management can get a better understanding of our particular technology transfer processes as a basis for policy and action. Without credible facts, neither Headquarters nor laboratory management can take action towards greater user credibility of the laboratory. Perhaps we need a survey of opinions from time to time to track credibility of the laboratory.

I mentioned the *linkers* at some length. We have done studies with the assistance of the Naval Postgraduate School to try to improve our understanding of our

formal organization and to determine whether it impedes or enhances the flow of technology. In regards to the *technical capacity* of our organization to make effective use of our laboratory generated technology, I do not think we have data as of now to tell you that we do or do not have it. Some of the future studies by NPS will hopefully be directed towards a measure of technical capacity as defined earlier. Again, intuitively, I believe over the years the output of CEL has become tuned to the technical capacity of NAVFAC, but again this can be contested.

1. *Reward/Penalty*—The reward and penalty associated with introducing new technology, however important, has not been studied, measured or assessed in our organization. Again, intuitively, it appears to me that there is more concern over the consequences and probabilities of failure (however low) than over the consequences of success (however high).
2. *Willingness to receive*—We have made it possible for anyone who needs technology information to be physically able to receive it. Means exist, i.e., money and telephones, for a man in need anywhere in our organization to consult the engineer or scientist at the laboratory. We, at least in the R&D shop, cannot however, induce his desire to do so. The R&D organization at the Naval Facilities Command headquarters can only make technology available. It cannot induce the desire of a field engineer to make use of the technology. The previously mentioned factor "Reward/Penalty" has much to do with the willingness to receive.

In closing, let me just say that our efforts are continuing and we hope that in the years to come we can develop some significant body of hard data that can serve as a concrete basis for management selection to improve the technology transfer environment throughout. Also we hope that our research results can be of value to other government and industrial organizations.

References

Allen, T. J. "Managing the Flow of Scientific and Technological Information", Ph.D. dissertation, Mass. Inst. Tech., Cambridge, 1966.

Allen, T. J. and S. I. Cohen, "Information Flow in Research and Development Laboratories", *Admin. Sci. Quart.*, Jan-Feb 1969.

Creighton, J. W., J. A. Jolly and S. A. Denning, "Enhancement of Research and Development Output Utilization Efficiencies: Linker Concept Methodology in the Technology Transfer Process", Monterey, Calif.: Naval Postgraduate School, NPS-55CF72061A, June 1972 (AD 756-694).

Doctors, Samuel I., *The Role of Federal Agencies in Technology Transfer*, Cambridge: M.I.T. Press, 1969.

Elster, R. S. and J. W. Creighton, "Utilization of CEL Technical Reports", Monterey, Calif.: Naval Postgraduate School, 1969.

Elster, R. S. and J. W. Creighton, "Distribution of CEL Technical Reports", Monterey, Calif.: Naval Postgraduate School, 1970.

Glock, C. and H. Menzel, *The Flow of Information Among Scientists, Problems, Opportunities and Research Questions*, New York: Columbia Univ., Bur. Appl. Social Res., 1958

Hendrickson, J. E. and W. G. Fisher, Jr., "An Evaluation of the Effectiveness of a Research Organization's Mechanism for Transferring Technical Information to Applied End Use", Monterey, Calif.: Naval Postgraduate School, 55Jo74121, December 1974 (AD A003-501).

Hodge, D. M. and G. H. Nelson, "Biological Laboratories Communication", Fort Detrick, Frederick, Md.: U.S. Army Biological Labs, Tech. Inform. Div., 1965.

Jolly, J. A. and J. W. Creighton, "FESO Project Effectiveness Profile, Summary and Analysis of 1972 Questionnaire Results", Monterey, Calif.: Naval Postgraduate School, Oct. 73.

Jolly, J. A. and J. W. Creighton, "Technology Transfer and Utilization Methodology: Further Analysis of the Linker Concept", Monterey, Calif.: Naval Postgraduate School, NPS-55Jo74061, June 1974 (AD A003-867)

Jolly, J. A. and J. W. Creighton, "FESO Project Effectiveness Profile, Summary and Analysis of 1973 Questionnaire Results", Monterey, Calif.: Naval Postgraduate School, September 1974.

Katz, E., "The Two-Step Flow of Communication", *Publ. Opinion Quart.* 21, 1957.

Knapp, D. and D. Parrish, "Investigation of Institutional and Behaviorial Barriers to Technology Flow and Utilization", Monterey, Calif.: Naval Postgraduate School, December 1974.

Lazarsfeld, P. F., B. Berelson and H. Gaudet, *The People's Choice, How the Voter Makes Up His Mind in a Presidential Campaign*, New York: Duell, 1948

Menzel, H., "The Information Needs of Current Scientific Research", *Libr. Quart.* 34, Jan 1964.

Tempest, E. H. and L. A. Van Rooy, Jr., "The Power Line-Disturbance Monitor: A Case Study of the Navy's Continuing Efforts in the Field of Technology Transfer", Monterey, Calif.: Naval Postgraduate School NPS-55Io75031.

APPENDIX E

AWARDS, PUBLICITY, NEWSLETTERS

The President's Volunteer Action Award

Citation

Established to recognize, inspire and encourage exemplary volunteer achievements in communities throughout the United States

This Citation presented to

Technical Volunteer Service

NAVAL UNDERWATER SYSTEMS CENTER

April 13, 1983

Ronald Reagan

NUSC Retirees Lend Their Expertise To Communities

by Donna Mansfield, 0702

Up on rooftops. Down on all fours with an ear to the ground. Sorting through stacks of equipment in federal junkyards. Retired volunteers have been turning up in the darndest places! Retired, for this group means only one thing, tired—again. But it is the good tired that comes from a job well done.

Ex-employees of the Center are bringing their technical experience to the community. There, they work to solve the small irritating technical problems of local government that often fall through the municipal budget cracks.

Early this month, Bob Gunning, Portsmouth, R. I., was on the roof at Tiverton High School to repair the broken antenna. Due to his efforts, the audio visual system is now back in shape. With a tightening budget, the school had higher priorities than the audio visual system. However, one man's donated efforts has restored the equipment to curriculum use.

The month before, Bob, who is interested in energy conservation, toured Portsmouth's municipal buildings with a representative of the Governor's Energy Office.

Joe Grendis, a retiree from Tiverton, R. I., made an appointment with the local police chief to inform him about the Technical Volunteer Service. While at the station, Joe discovered a problem with a print dryer in the detective division's dark room. He quickly called retiree Al Boivin, a photographer who also resides in Tiverton, to come and take a look. If Al could not fix the equipment himself, he could turn to personnel in his old NUSC Newport Photography Department for aid.

Communities, through the efforts of its own retired citizens, tap into the technical potential of 3,000 such specialists. This volunteer program is a small part of the Navy Technology Transfer effort adopted in 1972. The Technology Transfer law requires federal research and development laboratories to look for new ways to spin the benefits of science and technology into the public and private sectors.

NUSC has a formal program for sharing its scientific resources with state and local government and the university system. Called the Intergovernmental Personnel Act, this program "loans" technical specialists on a cost shared basis, for periods up to three years.

DIVERSITY OF SKILLS

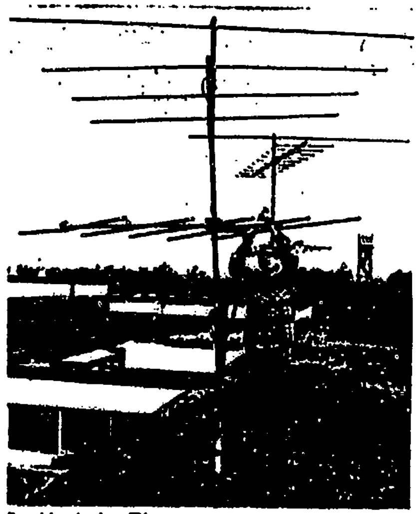
For more popular, however, is the informal system that offers the free assistance from Technical Volunteers to municipal neighbors. Over 300 regular volunteers and 36 retirees are currently signed up to help. The diversity of skills is incredible! It covers not only the education and experience of those involved, but also their hobbies and special interests, which range from home design to diamond searches.

Paul Mission, Westerly, R. I., is currently combing through the federal Excess Equipment List for an elevator for Westerly High School. The list, a world wide U. S. Government "Yard Sale", is likely to contain such a unique item.

John Drew and Joe Vargas are also familiar sights around the Westerly Town Hall. John is checking the effectiveness of a leak location device that helps find broken underground pipelines. Joe, calling on his years of engineering planning, has laid out a hypothetical planning department. This plan specifies position descriptions and managerial priorities and can be used by the Town Manager when he is ready to implement a planning department.

Cedric Chapman, a retired technical writer and calligrapher from Middletown, R. I., has designed a brochure to be distributed to municipal officials. The brochure details projects the

(continued on page 3)



Repairing broken TV antenna atop Tiverton High School's roof is retiree Bob Gunning. His technology transfer volunteer effort corrected the school's audio visual system.

NUSCOPE
NAVAL UNDERWATER SYSTEMS CENTER
Newport • New London • AUTEC – Andros Island, West Palm Beach • Bermuda
Vol. 11 — No. 13 The Principal Navy RDT&E Center For Submarine Warfare and Submarine Weapons Systems Friday, June 26, 1981

Human Goals Charter Signed by Weinberger

Secretary of Defense, Casper W. Weinberger reaffirmed the Department of Defense's Commitment to Equal Opportunity and Affirmative Action by signing the Human Goals Charter for military and civilian personnel on May 13.

The Charter was originally issued in 1969 and has been subscribed to by each Secretary of Defense. Other signers of the Charter include Deputy Secretary of Defense, Joint Chiefs of Staff and the Service Secretaries.

Secretary Weinberger stated at the 1981 signing of

(continued on page 3)

Pauline E. Grant Writer - Editor

NUSC Newporters were saddened to hear that Mrs. Pauline E. Grant, Code 043, writer-editor and assistant editor of NUSCOPE, died unexpectedly at her home in Tiverton, R.I. on Saturday, June 13. She was the wife of Tiverton Town Councilman William P. Grant.

PAULINE E. GRANT

Pauline, who brought much happiness and cheer to all that knew her at the Center where she had worked for the past fifteen years, was very active in public affairs activities for NUSC.

She was a member of many organizations, including the Federal Women's Program, NUSCOPE Advisory Board, NUSC Needy Family Committee and the Navy Public Affairs Officers' Association of Rhode Island. She was also a member of the Daughters of Isabella and the Catholic Women's Club in Fall River.

She was graduated from BMC Durfee High School in 1940, and was also a graduate of Thibodeau's Business School, Fall River.

Mrs. Grant was born in Fall River on August 26, 1923, and was the daughter of Mrs. Esther McNamara Emard and the late Arthur Emard.

Besides her husband and her mother, she leaves two daughters, Mrs. Joan Coulombe of Fall River and Mrs. Elaine Melancon of Tiverton; four grandchildren and an aunt.

Funeral services were held on Tuesday, June 16 from the August Hebert and Son Funeral Home, Fall River to a 10 o'clock funeral mass in Holy Ghost Church. Burial took place at Pocasset Hills Cemetery.

Newport and New London staffers will greatly miss Pauline, a special kind of person.

How to Keep Cool and Conserve Energy

The following energy tips are suggested for consumers by the U. S. Department of Energy during the summer months:

• Consider installing an old-fashioned ceiling fan in your home. It can lower your energy bills dramatically. Ceiling fans, like the ones made more popular by the movie *Casablanca*, use no more energy than a 15-watt light bulb and can reduce room temperatures in summer 10° to 12°.

• Set the thermostat on your air conditioner at 78°, instead of 72°, and you'll cut electricity use almost in half.

• Avoid, if you can, installing an air conditioner in a window that gets lots of sun; it makes the air conditioner work harder and wastes fuel.

• When you buy an air conditioner-or any other major appliance-check its Energy Efficiency Rating. New government rules require that all new equipment must carry an EEP label, which tells how much the appliance will cost to run during one year of average use.

• If you're planning to plant trees around your home, consider deciduous ones. In summer, the shade from the leaves can lower the temperature inside a house as much as 15°. (In winter, when the trees lose their leaves, they let through the warming rays of the sun.)

• Are you wasting water-bill dollars when watering your lawn? To check how much water your lawn sprinkler is using, place an empty coffee or scup can on your grass. An inch of water per week is enough for most lawns. If you're exceeding this amount, reduce the water pressure or cut back on watering.

• For free hot water during the summer, leave your garden hose (filled with water) in the sun. When you need to wash the dishes or take a bath, run the hose indoors. The longer the hose, the more hot water it will store.

• Don't ignore solar energy's possibilities for cooling as well as heating your home. Convert to solar and you'll qualify for a special income-tax credit. For more information, call the National Solar Heating and Cooling Information Center's toll free number: 800-523-2929.

A technology transfer brochure is currently being designed by NUSC retiree Cedric Chapman, for use by municipal officials. It will detail ongoing projects that retired persons have completed, plus list contact information for new requesters.

NUSC Authors Contribute Heavily to ASA Meeting

NUSC staff members were either authors or co-authors of a total of 19 papers accepted for presentation at the 101st meeting of the Acoustical Society of America, held May 18-22 in Ottawa, Ontario, Canada.

The authors or co-authors and the title of their papers are:

Dr. Peter Shajenko, 3331, "On Feasibility of Using Multimode Optical Fibers in Optical Hydrophones"; Dr. John P. Ianniello, 3212, "Threshold Effects in Time-Delay Estimation Via Cross-Correlation"; Barry G. Buehler, 3292, "Some Applications of Nonlinear Goal Programming in Acoustics"; Claude A. Ledoux, 3631, "Acoustic Evaluation System from Off-the-Shelf Instrumentation."

LCDR Peter N. Mikhalevsky, 33SM, "Envelope Statistics from CW Signals Propagated Under the Ice in the Arctic"; Peter D. Herstein, Paul D. Koenigs, and David G. Browning, all of 3341, "A Further Study of the Space and Time Stability of a Narrow-Band Acoustic Signal in The Ocean: Intermediate Range Results."

Paul D. Scully-Power, 101, LCDR Jonathan T. Maley, 33SM, and David G. Browning, 3341, "Canonical Eddies—An Estimation of Acoustical Effects", Herbert A. Freese, 3292, "A Comparison of Measured Arrival Structures With Several Theoretical Models"; Dr. Robert H. Mellen, 3332, David G. Browning, 3341, and CDR Vernon P. Simmons, DARPA, "Low-Frequency Sound Absorption in Sea Water: A New Chemical Relaxation Mechanism?"

Dr. Sung Hwan Ko, 3233, "Theoretical Approach to Predicting Sound Attenuation in Liquid Flow Ducts" (Invited Paper); Dr. William I. Roderick and William G. Kanabis, both of 3342, "Scattering Coefficients and Doppler Spectra of Specularly Scattered Sound From The Sea Surface."

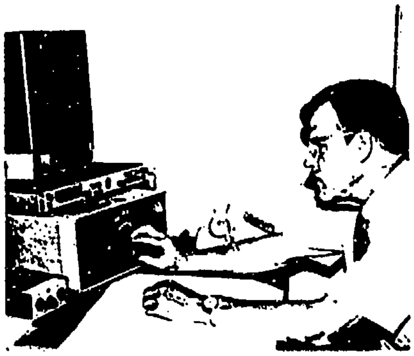
Robert F. LaPlante, 33492, Paul D. Koenigs and David G. Browning, both 3341, "The Effect of the Mid-Atlantic Ridge on Long-Range Sound Propagation"; and "Long-Range Sound Propagation Across Atlantic Ocean Seamounts: Implications for Ambient Noise" with R. L. Martin of NORDA.

Dr. Ronald P. Radlinski, 3332, "Interaction Between Two Gratings of Compliant Tubes"; Dr. Radlinski was also co-author with V. K. Varadan, T.A.K. Pillai, and V. V. Varadan of Ohio State University of a paper titled "Acoustic Wave Scattering By Elastic Cylindrical Shells in Water."

Dr. Ding Lee, 3342, co-author with S. T. McDaniel of Pennsylvania State University of "A Finite-Difference Treatment of Irregular Interfaces for the Parabolic Wave Equation."

Dr. Roger F. Dwyer, 3331, "FRAM II Single Channel Ambient Noise Statistics."

David G. Browning, 3341, was co-author of two papers, written with K. M. Guthrie, R. N. Denham, and R. W. Bannister of the Defence Research Establishment, New Zealand. Titles were "Models for Acoustic Range Propagation Over a Seamount of the Louisville Ridge", and "Measurements of Low-frequency Wind-generated Ambient Noise in the Deep Ocean."



Groton resident Robert Turner, a NUSC New London retiree, at controls of his ham radio, is constantly communicating with Connecticut area retirees sending the latest information on meetings and technology transfer information.

Retirees

(continued from page 1)

group has already completed and gives contact information for new requestors.

As a Community Liaison Coordinator at NUSC I affectionately call this group the "Gray Underground." Many are ham radio operators. They remind each other of meetings via the air waves and have even contacted peers in Florida to obtain key information.

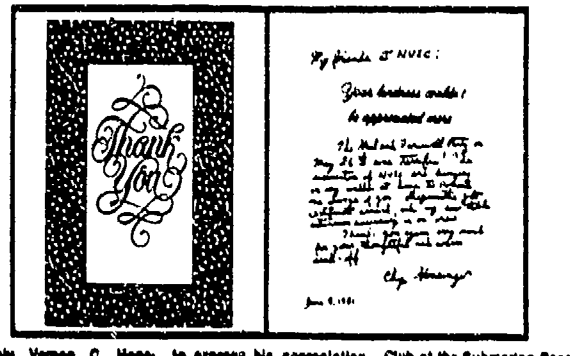
Robert Turner, a NUSC New London retiree, who resides in Groton, Conn., takes credit for passing the word to New London area retirees via his ham radio from his home. Mr. Turner is also working with the city of Groton on an instruction to simplify the operation of Groton's public address system.

In an era of tight budgets, municipalities are discovering that "Gray is Beautiful."

Charter

(continued from page 1)

the charter in the Pentagon. "Our signing of the Human Goals Charter is a symbol of the strong and personal leadership that each of us will give these programs. Equal Opportunity and Affirmative Action Programs must be inextricably interwoven into our efforts to revitalize American military strength because they can only improve our cohesiveness, our readiness, and our total defense capability."



Captain Vernon C. Hone-inger, former Commanding Officer, sent the note above to express his appreciation for the "Hail and Farewell" party held at the Officers' Club at the Submarine Base.

NAVAL UNDERWATER SYSTEMS CENTER
NUSCOPE

Capt. John W. Altee, IV
Commanding Officer

Dr. C. Nicholas Pryor Jr.
Technical Director

William F. Reardon
Editor

Burt La Coe
New London Editor

NUSCOPE is published by the Public Affairs Office every other Friday in compliance with NAVEXOS P-35 (Rev. January 1974) and is printed commercially with appropriated funds. Views and opinions expressed are not necessarily those of the Navy or Department of Defense.

Contributions are welcome and should be sent to the NUSCOPE Editor, Code 043, Newport, or the New London Editor, Code 033. All copy submitted for use in NUSCOPE must arrive at the New London Editor's office by noon Tuesday the week before publication, or at the Newport Editor's office by noon Wednesday the week prior to publication.

NUSCOPE reserves the right to edit or reject copy to comply with Center policy. NUSCOPE receives the services of American Forces Press Service (AFPS) and NAVNEWS.

TECHNOLOGY TRANSFER

NAVAL AIR DEVELOPMENT CENTER, WARMINSTER, PA.

EDITOR: J. BORTMAN

VOLUME 11, NUMBER 2
SPRING, 1983

TECHNICAL VOLUNTEER SERVICE - PROGRESS REPORT

Over two dozen Center employees and recent retirees have responded to the request for starting a Technical Volunteer Service to assist local governments and communities. Some examples of local technical assistance include:

- William (Stu) Lee (retiree), the Technical Volunteer Service Coordinator, has met with the Warminster Township Manager and assisted in identifying technical problems that matched the capabilities of the current volunteers.

- Howard Krumboltz (retiree) and Doug Crompton (3011) have assisted Warminster Township in locating problems and recommending solutions to problems with the township's public address system. Changes to the system have been successfully made. They have also investigated video and audio interference problems with township communications equipment and they have made recommendations that are being implemented.

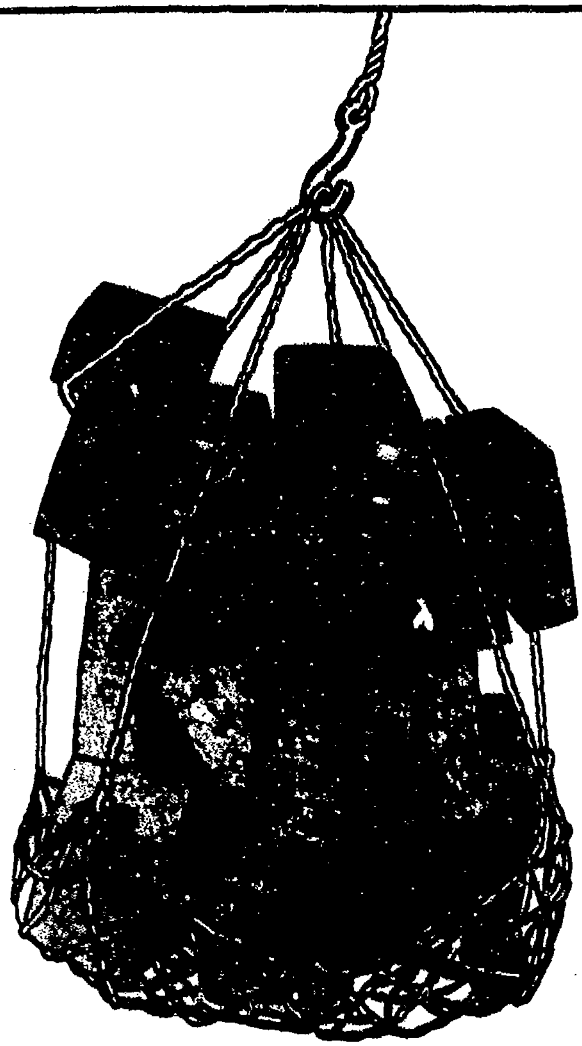
- Mike Masington (092) has met with Warminster Township Safety Committee and was able to assist them with their program development.

- Dick Thomas (5043) has volunteered to work with the Technology Committee of the Hatboro-Horsham School District to study computer use within district schools.

- Wayne Phillips (5022) continues to volunteer his time to assist in the use of an Apple II computer system as a communications aid with a severely handicapped woman.

DIMENSIONS

Vol. 1. No. 3 | Harry Diamond Laboratories, Adelphi, Md. | May 1985



In this issue, technology research and technology transfer are addressed. The formation of LABCOM and the Technical Volunteer Program are featured.

See pp. 3-5

Illustration by Richard Hannauer

Tech. volunteers
Pages 4-5

Volunteer in Appalachia
Pages 6-7

Honoring soldiers
Page 8

NEWS

HDL to be part of LABCOM

On April 25, the Army Material Command announced that the Electronics Research and Development Command will be converted to form the nucleus of the U.S. Army Laboratory Command (LABCOM), effective Oct. 1.

The reorganization comes as the result of a 10-month study of AMC laboratories and will support research focused on the Army of the 21st Century.

Harry Diamond Laboratories will be transferred in place to LABCOM, as will the U.S. Army Materials and Mechanics Research Center (AMMRC), Watertown, Mass.; the Army Ballistic Research Laboratory (BRL) and the Army Human Engineering Laboratory (HEL), Aberdeen Proving Ground, Md.; the Army Electronics Technology and Devices Laboratory (ETDL), Fort Monmouth, N.J. and the Army Research Office (ARO), Research Triangle Park, N.C.

Transition planning has begun under the leadership of Roland Covatoni, chief of the Resources Management Directorate. He was appointed by ERADCOM Commander Brig. Gen. James C. Cercy, to head the transition team. Representatives from each of the LABCOM elements will participate in the planning.

The director of Harry Diamond Laboratories, Dr. Louis M. Cameron, said he doesn't know at this printing how the reorganization will affect HDL. He didn't want to make any speculative statements.

Stuart Marcus, the director of Technical Support Operations at HDL, said the reorganization may affect ownership of HDL's base support operations offices, such as the Civilian Personnel Office, the Technical Library, legal and custodial offices, among others.

The U.S. Army Combat Surveillance and Target Acquisition Laboratory (CSTAL) and the Electronics Warfare Laboratory (EWL), Fort Monmouth, N.J.; the Atmospheric Sciences Laboratory (ASL), White Sands Missile Range, N.M., the Night Vision and Electro-Optics Laboratory, Fort Belvoir, Va., and the Signals Warfare Laboratory, Warrenton, Va., will be transferred in place from ERADCOM to the U.S. Army Communications-Electronics Command (CECOM), Fort Monmouth.

Research, development and engineering centers will be established at the U.S. Army Armament, Munitions and Chemical Command (AMCCOM), the Aviation Systems Command (AVSCOM), the Missile Command (MICOM), the Tank-Automotive Command (TACOM) and the Troop Support Command (TROSCOM).

The reorganization is an internal realignment of functions. Employees will not be moved and no personnel spaces will be lost or downgraded, according to Army Material Command officials.

Dr. Cameron to leave lab

Dr. Louis M. Cameron, the director of Harry Diamond Laboratories will leave HDL in June to serve as Director of Army Research in the Office of the Deputy Chief of Staff for Research, Development and Acquisition, Department of the Army, the Pentagon.

Cameron will replace Dr. Richard B. Lewis who is leaving to enter private industry.

Lab gets seized equipment

By Paul Case

A U.S. District Court in New York has awarded the U.S. Army Electronics Research and Development Command possession of a $996,000 optical pattern generator and photo repeater confiscated by the U.S. Customs Service.

According to Robert B. Reams, a supervisory physicist in the Micro-electronics Branch, Harry Diamond Laboratories, the equipment can be used to make state-of-the-art integrated circuits.

The generator and photo repeater were seized in 1981 by the U.S. Customs Service because the equipment was being exported without a valid license, Army officials said. Since then, it has been kept in a U.S. Customs Service holding area of the World Trade Center in New York City.

ERADCOM officials obtained the equipment after negotiating with the manufacturer and several government agencies—U.S. Customs, Commerce Department, Treasury Department and the Department of Defense.

Reams learned about the items while searching for a way to replace optical tooling equipment in his lab. He estimated that it would have cost at least $350,000 to upgrade his old system.

Richard S. McDaniel, who is responsible for ERADCOM's Productivity Capital Investment Program, was a primary negotiator. He said that the new equipment will increase productivity at HDL.

The Pattern Generator etches microscopic, computer-generated image patterns onto special plates. These plates are further reduced by a photo repeater and copied onto a grid as many times as needed. These reduced image patterns eventually become layers of complex, very high speed integrated, microchip circuits used in sophisticated electronic devices.

According to McDaniel, the new machinery will enable the Army to produce sensitive, one-of-a-kind integrated circuits not available anywhere else.

Reams said, "The machinery will reduce a tremendous backlog of work, support a number of military weapons systems whose replacement parts are no longer available from private industry, and do more advanced electronics research and development for less money."

McDaniel said ERADCOM will seek other impounded high technology items to "increase productivity and save the taxpayers' money."

Ron Bowers (right) discusses possibilities for a new communications console with Lee Struglia and George Cooley of HDL.

Sharing

HDL's Technical Vol... state of the art tech... help local communi...

Story and photos by Heike Hasenauer

Radio communications between dispatchers at the Rockville Police Department and their officers on patrol will soon be improved because people at Harry Diamond Laboratories helped the department select a new radio communications console.

Staff members of Saint Joseph's parochial school in Beltsville may soon be ringing in classes again. The school's bell-clock may again chime because of HDL's efforts to bring a bell-maker and a clock-maker together.

At the Howard B. Owens Science Center in Lanham a water table, developed for HDL fluidics research, will be used to demonstrate scientific concepts to high school students of Prince Georges County.

Employees at Harry Diamond Laboratories who are part of the Technical Volunteer Service, an arm of the Technology Transfer Program, give their time to help people in the community.

Through the service, they share their expertise in electronics, computer technology and scientific principles. They interact with teachers, law enforcement officials and city fathers in towns like Rockville, Lanham, New Carrollton and Takoma Park, Md.

They help solve such problems as what kind of communications system would be most appropriate for New Carrollton? Are the military designs for satellite antennas practical for a satellite communications business? Does the proposal for office automation for the city of Takoma Park contain everything that's needed?

In Washington, D.C., a radio station which broadcasts for the *Washington Ear*, a non-profit organization for the blind, asked for help in repairing and maintaining equipment.

HDL's volunteers, numbering about 40, study these problems and others and suggest solutions.

The Montgomery County Social Services Department wants to install computers to store its boxloads of information concerning welfare recipients.

The Federal City Council, a non-profit, non-partisan organization of Washington's top business, professional and civic leaders, in partnership with the District of Columbia Public School System, wants volunteers to help train the next generation of scientists and engineers.

HDL Talent needed

HDL volunteers would conduct seminars and workshops for science and math teachers and students, tutor the gifted, sponsor science and math clubs, give demonstrations in the applications of science and host school visits to local science and engineering facilities.

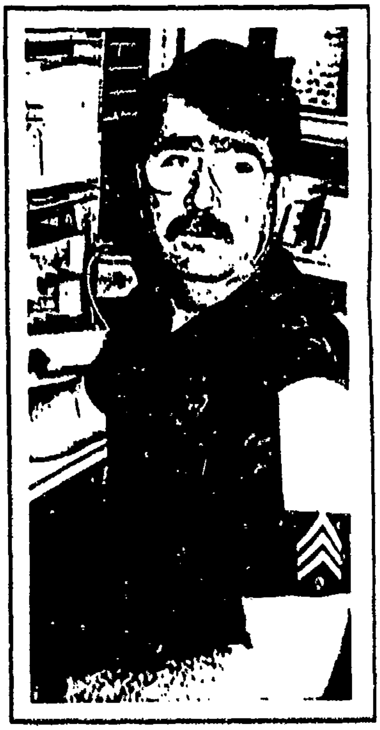
Members of the community are coming to HDL for advice because of the community relations-type program designed by Clifford Lanham, chief of the Research and Technological Applications Branch and to Lee Struglia, Technical Volunteer Service coordinator who implements the program. Credit also goes to the volunteers themselves, who ask for nothing in return for their time.

It's people like George Cooley, an electronics engineer in the Signal Processing Branch. Because he has a background in amateur radio, Cooley volunteered to help Ron Bowers who serves as Alternative Community Services Supervisor at the Rockville Police Department. Bowers was tasked to find a suitable communications system.

Cooley said Bowers was lost in electronics. "He didn't know what to do when it came to talking to contractors."

Cooley said he gave Bowers pointers and helped him talk to the contractor, explaining radio terminology. Of several consoles the department considered, they bought the lowest-priced model, which Cooley determined would do the job.

Bowers learned about HDL's Technology Transfer Program and the volunteer service when he attended a Rockville City Council meeting and heard Lanham speak.



Sgt. Charles Bender, chief of the Animal Control Division at the Rockville Police Department, fills in as radio dispatcher, a job he said will be easier when a new communications console, recommended by HDL volunteers is installed.

Dr. Hays Lantz, Jr. the director of the Howard B. Owens Science Center in Lanham, and Addison Likins, a science center specialist who builds exhibits, also learned of the program at a community meeting.

Likins said when he first saw the fluidics water table "It looked like something from another planet. I'd just never heard of fluidics before," he said.

"Actually, it's quite common when you consider that windshield wipers are powered by fluidic devices," Likins said.

When the fluidics table is assembled, it will be

The Wealth

unteers are sharing
nologies to
ies.

Dr. Hugo Lantz helps a fourth-grade student identify a microscopic sample.

Addison Likins, a science center specialist, checks a piece of gadgetry on his weather demonstration exhibit.

used to demonstrate the principles of aerodynamics and fluid amplification.

"We'll be able to show students how rapidly flowing streams of water interact," Lantz said.

During any given school day, the science center hosts about 600 high school and elementary school students of Prince Georges County, who come for hands-on instruction in biology, physics, astronomy and other areas of science.

The center has live snakes, reptiles and fish and even its own planetarium.

Teachers all across Maryland and Virginia are using HDL's ideas to teach science in a more interesting way, Struglia said.

Eleven laboratories around the country are sharing their technologies in similar ways with their own communities.

At the Naval Air Development Center in Warminster, Pa., volunteers helped a local fire department "invent" a wireless communications device that firemen could wear with their respirator masks.

A retired electronics engineer developed a prototype transmitter that fits into the mask with a belt-mounted receiver.

A local elementary school there asked for help with a planetarium projector, after learning that the company they purchased it from wouldn't repair it. Again, it was a retired government employee who helped. He machined a replacement part.

At the Lawrence Livermore National Laboratory in California, a computer scientist and a math programmer are advising a local hospital about a data base management system to monitor its data for marketing predictions.

A geophysicist is helping a history teacher use her computer to generate maps with differing perspectives.

And a retired physicist is working with a gifted first-grader who's interested in science.

The volunteers at Harry Diamond Laboratories are doing more than solving problems in their communities. They're introducing HDL's engineers and scientists and the work they do to people throughout the state and right outside the laboratory's main gate.

A teacher who's received help through the Technical Volunteer Service said, "You know, I live near the laboratory. For years I've driven back and forth and wondered what the heck went on inside. Now I know. I really feel good about it," she said. "I thought maybe you all developed secret potions or something."

Volunteers, including Kathy Kircher, Chris Paul, Mary Binseel, Jon Hubbard, Harry Hill, Bruce Posse, Mary Tobin and Ray Bakeran are a few of HDL's volunteers.

They're promoting good relations between government and industry, the military and the civilian work forces.

What better community relations program could there be?

Rocky Flats Plant

ROCKWELL NEWS

Rockwell International

RI-RF-N2

Volume X, Number 3, February 17, 1984

Extensive testing assesses exposures

(Editor's Note: This is the first of two articles on radiation. This installment identifies the three tests used to determine radiation exposure. A future *Rockwell News* article will compare occupational doses with naturally occurring radiation doses, and will discuss the risk of low-level radiation.)

Employees have been monitored closely for radiation exposure since the plant began production in 1953. And as employees, we are required to participate in the body counter, urinalysis and dosimetry badge dose assessment programs. These three separate programs are the plant's backbone for checking all possibilities of a radiation exposure.

Wilma Jacobs, Radiation Protection, prepares Jerry Washington, Production Control, for the body counter.

"Plutonium, americium and uranium can enter the body in one of three ways," said Dale Bokowski, Health Environmental Analysis Lab. "They may enter through inhalation, a cut in the skin or by ingestion."

The body counter measures radioactive materials that are in the lungs. Urinalysis assesses soluble radioactivity in body tissues and the dosimeter badges are used to measure external, or radiation exposure from outside of the body.

The term body counter is misleading. "It would be more accurate to call it a lung counter because it is actually used to detect radioactive material in the lungs," said Larry Coldren, Body Counter program administrator.

The lungs are the most likely part of the body where inhaled, insoluble radioactive materials would be found. The lung-counting program has established a routine examination based upon risk of present or future exposures, and history of past exposure.

"Because we need to measure such low quantities of radioactivity, we try to shield out as much naturally occurring radiation as possible," said Roger Falk, Radiation Protection. "To do this, we perform the lung-counting evaluation within a six-inch thick steel room."

Within this room are eight high-purity germanium nuclear radiation detectors. To get very high sensitivity, the detectors must be kept at minus 300 degrees Fahrenheit.

"Germanium is the best detector material currently available for our purpose," Coldren said. "Our equipment is so sensitive that we can detect a fraction of the DOE limits in almost all situations."

Although the lung counter is currently the best way of detecting Rocky Flats radiation within the lungs, it does not give the entire picture. "It's like looking at two sets of finger prints," Falk said.

The other set of "finger prints" used to provide an assessment of internal radiation exposure comes from the urinalysis test. Soluble radioactive materials usually leave the site of deposition, such as the lungs or a wound, and move to other organs of the body. Urine samples are collected to permit evaluation of the quantity of soluble radioactive materials in the body by using biological models. These data help characterize the dose to an organ or to the whole body.

Our dosimeter badges use lithium fluoride crystals, which are thermo-

(continued on page 2)

Volunteers pitch in to solve problem

For most of us, the workaday world is routine. We rise at the appointed hour, put in our day at the plant, return home. It's a pattern that's as exciting and predictable as a metronome.

But this stability and predictability that we sometimes disdain is exactly what is missing in the lives of a number of people at a Boulder work training center. These people have emotional problems that prevent them from being able to cope with the stress of normal existence. Their individual reasons vary, as does the severity of their disturbances, but one underlying factor is shared. They all need special help in learning or relearning how to work for a living.

These people are employed by the Work Adjustment Training (WAT) Shop, a part of the Boulder Mental Health Center. They get no handouts there, except kind, trained helping hands from the staff. The employees perform tasks to the extent of their abilities and are paid accordingly.

When the WAT Shop asked Rockwell for help recently, Community Relations Coordinator Mary Bach went to work. She scanned the results of a survey conducted among Rockwell employees in December, which reported their interest in volunteering in the community. Because of the nature of the WAT Shop request, Bach zeroed in on an employee who had been particularly enthusiastic about work in the electronics field.

Steve Blount, Telecommunications, was pleased to hear from Bach. He soon enlisted the support of three co-workers to see how they could help the WAT Shop: electronics technician Sil Romero, Process Control and Electronics Maintenance; electrician E.W. (Alex) Alexander, Electrical Maintenance and Machining; and machinist Tim Eckhardt, Preventive Maintenance.

"What was a huge problem for the WAT Shop was relatively simple for us," said Blount, a trained electronics technician. "The four of

(continued on page 2)

Steve Blount (left) assists a WAT Shop client with the punching tool designed at Rocky Flats.

Parts found faster using new system

Mike Hattel displays his new warehousing system.

With space as tight as it is on plantsite, it's good to know someone is using it as efficiently as possible.

Mike Hattel, with assistance from Joe Grammier, both in Production Control, are credited with establishing an improved inventory and warehousing process in Building 444.

"Before this process was established, it took 15 to 20 minutes and sometimes as long as an hour to find a part," Hattel said. "Now all we have to do is punch the part inventory number up on the computer to determine its location, which takes about five minutes."

Hattel's ideas are a carry-over from his former job that involved reorganizing the inventory and warehousing of parts in Building 881.

Every machine part is inventoried on a computer system, which is part of the Manufacturing Resource Planning (MRP) system currently being implemented on plantsite. MRP is a computerized inventory and planning system that will allow the plant to better track every part as it flows through the production cycle. It will also give schedulers more information regarding parts and materials so they can schedule work more efficiently.

But even without MRP, Hattel's new system would still allow employees to find machined parts more quickly, because each part is stored in numerical order and by its location in the production cycle. For example, newly received parts are stored together, and are then stored on different shelves as they move through the machining and inspection steps.

"We tried to keep the system simple so it would be easy to maintain," Hattel said. "The simplicity and the fact that everyone here is taking pride in their jobs is what makes the system work."

Helping people is a good feeling

(continued from page 1)

us pooled our talents to design a punching tool for the Shop, which will save them tremendous amounts of time, money and effort."

The punching tool will be borrowed from Rockwell by the Shop to do work for a major computing firm. The job calls for modifying plates for disk drives, and previously required drilling several holes in the two plates individually. Blount's team's contribution is expected to allow production of [illegible] to [illegible] drilled plates per day, versus [illegible] under the old procedure.

"The punching tool itself is not a modified time card punch machine that was too many for use in our office," said Blount. "A new die for it is being machined by Alex's son Tim, who is donating his time as a tool and die maker for a local company."

The punching job is one of many the WAT Shop performs for numerous local firms. Contracts range from bulk mailings and envelope stuffing to electronic assembly. Business income provides [illegible] percent of Shop funding, making it nearly self-sufficient, which is the goal.

But occasionally, help comes to them in the form of people like Blount, Romero, Eckhardt and Alex and Tim Alexander. "Sometimes I'm asked how I manage to volunteer my personal time with a family and a full-time job," says Blount. "But believe it or not, I've only spent six hours in the past two months on this project. Volunteering doesn't have to require a big time commitment.

"And I tell you, doing this sort of thing keeps me young, keeps me thinking. I have selfish reasons for helping, I admit. There's a great satisfaction in the fact that we're able to contribute and help the disabled at the same time.

"I know there's a lot of people in Rockwell who would like to volunteer their time to some worthwhile project but maybe they're afraid to speak up. There's always the fear that, 'I don't have anything to offer, so I'm no expert.' The point is how to get ideas and maybe a little spare time — and these make you very valuable."

"I agree with Steve," said Alexander. "I also volunteer because it makes me feel good to help others. Some of us take a lot of things for granted. Things come so easy for us. But these people are trying to be rehabilitated and are really afraid to tackle what we don't think twice about. I hope this project inspires them about new and better ways of getting a job done."

Once the new punching machine is installed, Blount's team will continue helping the WAT Shop on its technical problems. "The Shop is moving into a larger building soon, and we'll be advising on lighting and power distribution questions," said Blount. "We're also looking at product flow problems, and Tim Eckhardt will be checking out machines donated to the Shop to ensure they meet specifications."

In addition, with help from Bock, the team is searching for a [illegible] power specialist who is interested in donating some time and expertise to the new building project.

For the more than [illegible] clients at the WAT Shop, our employees' help can only be a boon to their comfort and efficiency in the workplace and to their eventual recovery.

Here's how to volunteer

Would you like to volunteer? It's a "feel-good" thing to do. The Rockwell Community Resource Bank is being formed to organize employees' interests and match them with the needs of our communities. For more information, contact Mary Bock in Communications, x[illegible].

ROCKWELL NEWS

[illegible]

Editor
Ed Ellis

IABC

International Association of Business Communicators

Forum

Employee questions, concerns addressed

Forum is designed to answer your questions regarding the plant, and to get your concerns heard. If you have a question you would like answered or a concern you would like to express, write to Ed Ellis, *Rockwell News*, Communications, Building 111. If you don't wish to have your name or question published in the *Rockwell News*, please indicate this in your letter. If you don't have time to write, call the *Rockwell News*, x[illegible].

Dear Editor,

What medical services are available to us through the Medical Department?

Dear Employee,

The Medical Department is here to treat all occupational injuries and illnesses. We also treat minor illnesses or injuries, such as a headache or a cut, if our treatment would allow the employee to remain on the job. We can also dispense selected nonprescription drugs to help an ill employee get through the day. However, employees are referred to their private physician for follow-up treatment.

In an effort to maintain a healthy work force, we also perform medical examinations every year for employees working in [illegible] and [illegible] areas, guards, firemen and for those over the age of 45. For all other employees, we perform medical examinations every other year.

In addition, we offer voluntary health programs such as stop smoking classes, weight loss, stress management, and nutrition and preventative type programs. These programs are aimed at improving and maintaining employee health.

Mary [illegible], R.N.
Medical Department

TLDs help detect exposure

(continued from page 1)

luminescent dosimeters (TLD) to record the amount of external radiation we receive. These detectors are inside of your dosimeter badge. When penetrating radiation such as a gamma or X-ray strikes the crystal, the crystal records the exposure. When the crystal is heated properly, it emits light. The amount of light is measured, and is translated into the amount of dose received.

"We are developing a new type of dosimeter badge," Falk said. "The principle will be the same, but the TLD will be put inside a [illegible] cartridge, which will allow us to process the dosimeter badges more quickly." Currently plans are to begin distributing the new badges in April.

"The health and safety of employees is taken seriously at Rocky Flats and we are constantly trying to improve our already good system with the most advanced state of the art technology," Falk said.

If you have any questions regarding your radiation exposure, contact Radiation Dosimetry, x[illegible].

SC-5216/1 (REV. 6-70)

NEW LONDON LABORATORY
NAVAL UNDERWATER SYSTEMS CENTER
NEW LONDON, CONNECTICUT 06320

IN REPLY REFER TO:

0702:DJM:kab
Ser: 10702(L)-15
21 January 1981

MEMORANDUM

From: Donna Mansfield, Community Liaison Coordinator, Office of Special Programs Development
To: NUSC Technical Volunteers

Subj: Volunteer Update

1. You haven't heard from me for several months because I've been working on a statewide project in Connecticut to enlist the volunteer support of community college instructors.

2. While not yet perfectly responsive, this new resource supplies some fifty additional volunteers. Hopefully, they can solve problems we were having with distant requests (the CT-NY border) and requests in areas where the expertise does not reside at NUSC. Those of you in Connecticut who act as referral sources for your own municipalities should add these instructors to your resource list.

3. As a result of the summer's work, four community colleges and one state technical college have joined to send a grant to the Kellogg Foundation. If granted, the funds will be used to provide municipal services across the state.

4. Another All Hands mailing will go out shortly to solicit volunteers for our program. Please fill it out and return even though you are already registered We will also use the information to update our files, change phone numbers and addresses as well as add new experience and education that you may have gained in the last two and a half years.

5. I re-emphasize please don't be discouraged if you haven't been called for a project. We make calls all the time to people who are surprised that we still have their survey.

6. The TVS honestly has not been as active in Newport as it has in New London. Following some constructive suggestions made by Gary Gabriel we will initiate a new project. Mike Ahrens, Head of the Office of Special Programs, will begin spending a day each week in Newport. While there, he will arrange to speak with municipal officials with various volunteers from defined geographic locations. It is the hope that such interchanges will make RI volunteers aware of the type of problems municipalities experience. At the same time it makes municipal officials aware of the type of expertise we have at NUSC.

7. Another suggestion may increase the effectiveness of the Newport program. If you are aware of a problem in your community that has a technical component, let me know. Technology transfer works both ways -- we often call towns to tell them we have answers even though they haven't posed the question. To receive proper credit, a thank you letter in your personnel file, you must clear eligibility of the project first with this office.

8. This is a sample of the current projects:

1. Word Processing - The City of Groton and Fitch Senior High School need assistance to determine how word processing can simplify their operation. The school wants to establish requirements for developing data processing courses. Volunteer: Tony Montesi, New London

2. Audio-Visual Tapes - The Career Center at a local high school is conducting interviews with various NUSC professionals. The questions are designed to input real world data to students so they know what it is really like (on a day-to-day basis) to be an engineer, physicist, computer scientist, etc. When a student is considering careers, they simply go to the center, pull a tape and hear from someone who is involved in that specialty.

3. Coast Guard Academy Acoustic Problem - The band room acoustics are bad which prevents a full band practice. This means the stage and auditorium have to be heated for practices. This drives up energy consumption at a time when the Academy is trying to conserve. Volunteer: Rudy Croteau, New London.

4. Electronics - Tiverton, RI's pump house flooded, shorting out an electronic valve. The company couldn't fix it for a number of weeks. Gary Gabrie NUSC/Newport, fixed the valve so Tiverton officials did not have to go into manual monitoring mode.

5. Bristol Community College instructor - this college was looking for someone to fill in to teach some basic electronics courses while the regular instructor was on sabbatical. Ed Murphy, NUSC Newport Retiree, took the job. However, if any of you might be interested in part time teaching, please send your resumes to Dr. DeMaris, Bristol Community College, Fall River, Mass. Mike Altshuler had a good idea in suggesting "Guest Lecturer" courses whereby several engineers teach the same course. The idea can be further discussed with Mike at x4671 Npt.

6. Information was provided to Lebanon, CT on a new natural filtration technique - a reed "fragmatis australis". This reed has been tested in Germany. A two and a half acre reed bed has treated the sewage of a 2500 inhabitant community for five years.

9. A problem for the thinkers out there... A city divides its community into three police districts. When a police call comes in from district 1, the cruiser assigned to that district is sent, even though it may be miles away from the scene. At the same time, another cruiser, much closer, but assigned to district 2 is not summoned. The city manager wants a system to constantly monitor the whereabouts of cruisers in all districts so the patrol car closest to the scene can be dispatched. It also must be reasonably priced - any ideas???

10. We are beginning to actively assist state levels of government. Elwood McMorrow, New London, has agreed to provide the Energy Office in Connecticut with technical assistance on questions of hydropower. Have worked with CT OPM-Intergovernmental Relations and a presentation will be done for CT DOT on automated fuel dispensing systems, the result of Bill McGrath's work with the New York City Police Department.

11. If you have any questions, requests for help or comments regarding NUSC Technology Transfer, please call me at x4603 NL.

Donna Mansfield

DONNA MANSFIELD
COMMUNITY LIAISON COORDINATOR
OFFICE OF SPECIAL PROGRAMS DEVELOPMENT

NAVAL UNDERWATER SYSTEMS CENTER
HEADQUARTERS
NEWPORT, RHODE ISLAND 02840

NEWPORT, R. I. 02840
AREA CODE 401
841 - EXT.
AUTOVON 948 + EXT.
NEW LONDON, CONN.
AREA CODE 203
442 - 0771 - EXT.
AUTOVON 636 + EXT.

IN REPLY REFER TO:
0702:DJM:ct
Ser: ō072-223
29 Nov. 1978

MEMORANDUM

From: Code 0702
To: Technical Volunteer Distribution

Subj: Volunteer Update

You are a member of the Technical Volunteer Service! Surprised? That survey sheet you filled out a few months ago for the Office of Special Progra Development was your registration card.

Some of you are aware of what technical volunteers do because you have already received a phone call to help. Others must be wondering if filling out the form was an exercise in futility. It wasn't.

We now have over 180 volunteers. To date, we have had 43 technical requests. If you haven't been called by us yet, the chances are a request appropriate to your skills has not come in.

Here is a sample of the technical requests we have received since the service was initiated in August.

1. Information requested on navigational aids to solve a problem for Puget Sound ferries.

2. Where can we go for help in making school bus route schedules?

3. Where can I find out if an international symbology exists for the printing press business?

4. How can I increase gas mileage on police cruisers?

5. Does the NUSC software program for instrument calibration have application for my business?

6. How does a town go about converting from contracted police services to its own force?

0702:DJM:ct
Ser: 8072-223
29 Nov. 1978

Subj: Volunteer Update

7. Can you help me (a regional planning agency employee) become savvy about computer graphics before there is a push to institute it into state government?

Can NUSC personnel really answer the kinds of questions listed above? You bet they can!! The Center has a large force of vital people whose interests range broadly beyond the limits of their PD's.

A good deal of the help we give to municipalities and companies requires no more than a phone call. Often a NUSC volunteer can answer the question wit little or no research effort required, and in those cases where they can't, the technical volunteer usually knows who can. Not many requests are turned away unanswered.

The Technology Transfer staff is presently making plans for a Civil Preparedness workshop which highlights the assistance NUSC people gave to the Town of Waterford in developing a communications systems for use in the event of a civil disaster.

We are exploring the possibility of developing a software exchange program for municipalities in conjunction with an organization for municipal data processors. Connecticut, Rhode Island and Massachuseets towns would be included if this central pool becomes reality.

Many of you are quite involved in your own communities and are therefore, familiar with the types of problems which exist. We would be happy to conside suggestions for possible future topics for our technical workshop series. If you have further questions or suggestions regarding the problem, please contact Donna Mansfield at X-2116.

J. E. ATKINSON,
Code 0702

rtvs
retired technical volunteer service los alamos national laboratory Duplicate

the second mile newsletter

Volume 1, Number 4 September, 1984

Since our recent beginning in January we have had a very good response from you, as you have made yourselves available for volunteer requests. Your good-natured cooperation is very much appreciated. Our listing of available skills has now reached more than a hundred.

Those of you who already have performed volunteer tasks have been mentioned in this and previous newsletters. Others of you have been equally willing to give of your time, but the type of request to match your own indicated skills has not yet been received. For that reason, I would like to honor <u>all</u> who have said that we may call upon them, by listing their names:

Harleigh Allen, Harold Argo, Silvio Balestrini, Otis Boise, Curtis Bond, William Bradley, Art Briesmeister, Ross Calvin, Robert Carpenter, Thomas Carroll, Ruby Chandler, Ivan Cherry, Conrad Christenson, Marjorie Cozzens, Charles Daggett, Cecil Delano, John Enders, Hannibal Fraga, Arthur Hemmendinger, Richard Hicks, Richard Hiebert, John Hopkins, William Kennedy, Eugene Kerr.

Ellen LaPlant, Elizabeth Leffler, William McCall, John Manley, James Morgan, Matthew O'Keefe, Joseph Parker, Carol Price, Sherman Rabideau, Bruce Riebe, Ruben Sandoval, Raemer Schreiber, Harry Schulte, Frances Segar, Leonard Scott, Frederick Skoberne, Marcella Southard, Emory Stovall, John Sullivan, Dante Susco, Robert Ullrich, Lucas Velasquez, John Wahlen, John Weinbrecht.

Recent RTVS Activities

Matthew O'Keefe has volunteered to help the Los Alamos Senior Citizens Program (located in Fuller Lodge) with their video camera recording once a month. He also will be the coordinator for training others to help record Senior Center events. Would anyone else like to be on call with Mr. O'Keefe?

Harold Argo will represent the Laboratory's Speakers Bureau by giving a presentation at the La Farge Public Library in Santa Fe on October 4, 7:00 p.m. His talk will be "The Early Days of Los Alamos" and he also will show the Laboratory film entitled "The Beginning." This program will be open to the public.

The New Mexico Energy Research and Development Institute (NMERDI), Santa Fe, has enlisted the help of Ruby Chandler to enter library files into their office computer system. This will be an ongoing project for awhile.

Included in a recent field trip sponsored by the New Mexico Museum of Natural History were Betty and Del Leffler. The museum group spent a day in the Rio Grande Gorge Park, close to Pilar, making basalt rubbings for the museum. Future field trips are being planned. Would you like to take part?

p.o. box 1663, p360, los alamos nm 87545 (505)667-4355

Recent RTVS Activities -- (continued)

John Wahlen, with the assistance of Bill McCall and Ross Calvin, will be helping the town of Roy, New Mexico. They have been asked to re-survey the town's cemetery, as well as new land needed for development.

A Particular Current Need

The Espanola city manager would like consulting assistance from a dietitian or nutritionist. Would anyone be interested on an occasional basis with mileage and out-of-pocket expenses reimbursed?

Also in Espanola there is a need for an audio engineer, or someone with such experience, who could help advise about a gym that needs insulation for better sound control. Please call us at 667-4355 if you could help them.

Another International Volunteer Opportunity

We had a large feedback to our earlier announcement concerning volunteer overseas placements through the Department of the Interior. Now we have another suggestion. The Laboratory's Technology Transfer office has referred us to the International Executive Service Corps (IESC), as well. (We were told that volunteers do not have to have been executives, despite the name.) Material from IESC, which is based in Stamford, Connecticut, describes themselves as a global network of people working to upgrade management skills, improve basic technologies, and increase productivity of businesses in the developing world. They recruit technical advisors to share their years of know-how and expertise. IESC has worked in 74 different nations since the first advisors were sent abroad in 1965. Travel expenses are paid for the volunteer and his or her spouse. For further information you may write to Mr. Paul M. Aubry, Vice President--Recruiting, International Executive Service Corps, 8 Stamford Forum, P. O. Box 10005, Stamford, Connecticut, 06904-2005, or call him at area 203, 967-6006.

Technology Transfer

You may be interested to know that the Laboratory has an active technology transfer office and staff. They recently compiled some information about their activities.

The Los Alamos National Laboratory has made major initiatives to promote technology-based economic development in northern New Mexico, in recognition of the central role of small-business innovation in the nation's economy and the need and value of economic diversification and development in its neighboring areas. The Laboratory has established as a goal to "participate in development of an environment of high-technology industry and individual entrepreneurship in northern New Mexico."

- o With Laboratory encouragement, over 200 members of the technical staff engage in technical consulting or personal businesses, providing a direct transfer of laboratory-developed know-how into the private sector.
- o The Laboratory hosts a monthly innovators' forum to expose the staff to individuals experienced in technical entrepreneurship.

Technology Transfer -- (continued)

- The Laboratory was a primary sponsor and organizer of a "Workshop on Small Business Incubators" in April, 1984 as a service to local communities and others from across the U.S. interested in developing a supportive environment for small-business startups. There resulted a community effort in Los Alamos to develop an incubator facility and a seed capital fund.

- The Laboratory has cooperated with several state-level efforts to create a technical entrepreneurship network, the state's efforts in technology-based economic development and university programs to assist technical entrepreneurs.

- The Laboratory participates actively in the Federal Laboratory Consortium for Technology Transfer, making its technology available nationwide through the FLC network. Our Industrial Initiatives Officer, Eugene Stark, is national chairman of FLC.

- The Laboratory cooperates with the DOE, the University of California and individual inventors to facilitate the pragmatic commercial availability of laboratory inventions. Resulting licenses or waivers of title have been sought almost exclusively by small businesses.

- The Laboratory has encouraged appropriate assistance to Small Business Innovative Research (SBIR) program applicants and grantees, and has participated in programs to promote the SBIR program to potential applicants.

rtvs

retired technical volunteer service los alamos national laboratory

the second mile newsletter

Volume 2, Number 3 August, 1985

A Second Volunteer Program for the Laboratory

The Community Relations Office of the Laboratory conducted a two-part survey of Laboratory employees earlier this year to determine (1) what type of volunteer activity is being done on a personal basis (and in which counties) and (2) what resources might be available for volunteer jobs during the after-work hours. A tremendous response was received.

Nine hundred twelve (912) employees responded with listings in areas that range from Youth, Community, and Political activities to service in Professional Societies, Religious, and Environmental groups. Volunteer time spent by Laboratory employees during the preceding twelve-month period totaled more than 170,000 hours. The work was done in eight northern New Mexico counties.

The second part of the employee survey polled skills and interests, to be used by this Volunteer Office when requests for assistance are made. The new program is called Volunteer Service Program (VSP) and is not intended to be a substitute for our already active Retired Technical Volunteer Volunteer Service (RTVS). The VSP helpers are asked to give their service during off-duty hours, in the evenings or weekends. This is standard practice at the other federal laboratories (where oftentimes the retired and current employees are merged into one volunteer program). While the thrust of RTVS has been the volunteering of your professional and technical skills, the VSP requests that we have received to date have covered such areas as providing musicians for programs and umpires for ball games, as well as consultants offering technical advice. Our retirees continue to be the most sought after volunteers because of their many years of experience and because of greater ease of fitting into the daytime schedules of various organizations. For this reason, we look upon the employee volunteer program as an excellent complement to our original program designed for retired personnel. Periodic updates about both volunteer programs will be given in future newsletters.

Recent RTVS Activities

Five of our retired volunteers will assist in a land use study for city planning in one of the Valley communities. Otis Boise, Hannibal Fraga, Silvio Balestrini, and John and Lee Sullivan will survey the area under the direction of the city government.

Art Briesmeister and John Manley were willing to lend a hand with their carpentry skills to the Los Alamos County Parks Department in their Adopt-a-Park program. There still is a need for signs to be made for the "adopted" areas. Are any of the rest of you interested if the supplies are furnished to you?

p.o. box 1663, p360, los alamos nm 87545 (505)667-4355

Recent RTVS Activities (continued)

The annual Arts and Crafts Show sponsored by the Eight Northern Indian Pueblos had the assistance of an RTVS volunteer in July. Frederick Skoberne helped with the checking in of items as they were entered for the judging.

John Mench is representing the Laboratory's Speakers Bureau in August. The members of the Santa Fe Rotary Club will enjoy a talk about the early days at the Lab and the Trinity shot.

We appreciate the help of each of you. Thanks very much!

Interesting Fact . . . .

The accident rate for people over 65 is less than two thirds that of younger people, according to a study by the National Center for Health Statistics.

An Overseas Opportunity

We have received a letter from the LLNL (Livermore) Retirees Association concerning needs in one of the United States trust territories, the Island Government of Saipan. They are seeking the following types of people:

1. Vocational Rehabilitation Counselor
2. Administrator for Vocational Rehabilitation
3. Director of Nursing (R.N.) for a new hospital
4. Clerk of the Court (Federal Docketing and Administrative Procedures)
5. Income Tax and Tax Law person
6. Statistician
7. Manpower Development Specialist
8. Biomass Engineer for (a) an economic feasibility analysis, i.e., cost of construction and operation vs energy savings and by-products, and (b) chemical process evaluation, chemical analysis and production data for the plant.

Our volunteer office here in Los Alamos will be calling those of you who responded to our earlier information on overseas opportunities. If you have not received a call and are interested, or if you need further information, please call Louise Carlson at 667-4355.

Lighten your Jet Lag

Here's a tip for handling east-to-west jet lag: When you arrive on the West Coast, try to arrange spending several hours outside before sunset for the first couple of days. Experts have found that flying west turns an Easterner into a temporary extreme lark--you know the feeling if you've ever awakened bright eyed at 4 a.m. in California. Spending time in the sun late in the day tends to alleviate the problem, according to Alfred Lewy, M.D., Ph.D., a psychiatrist who has studied the effect that sunlight has on mood and behavior. More sunlight helps to readjust your body's clock more rapidly. You can reverse the procedure if you're flying from west to east (which turns you into an extreme owl). When you arrive in the East, try to spend a few hours outside early in the morning for several days.

Technical Volunteers

Lawrence Livermore National Laboratory

May 1985 Volume 2, Number 3

TECHNICAL VOLUNTEERS newsletter - to inform LLNL technical volunteers of the activities of the program and opportunities for volunteer service.

LLNL VOLUNTEERS ARE APPRECIATED

LLNL employees and retirees working as volunteers in several Lab programs were guests at a Volunteer Appreciation Luncheon at Round Hill Country Club on May 17. The luncheon was sponsored by the Community Volunteer Council, an organization of area businesses and corporations with employee volunteer programs. Fredrich J. Wehmann, Jr., Vice President of AT&T and Dr. S. N. Lewis, Executive Vice President of the Clorox Company were co-chairmen for the event.

Bob Godwin, Deputy AD for Administration, represented Director Roger Batzel at the luncheon. He expressed appreciation for all the many LLNL employees and retirees who participate in Lab volunteer programs and emphasized the value of these programs to the Lab as well as to the community.
Charles McMillan, Frank Balgos, Cherie Jo Patenaude and Henry DeCoursey were invited to represent the Technical Volunteers. Bettie Myers, Sharon Wilson, Jim Tracy and Steve Mich were asked to represent volunteers with the Lab Science Education Center and Tutorial program.

TECHNICAL VOLUNTEERS IN ACTION

Bud Barlow, an electronic engineer with the Field Test Systems Division of the EE Department, is helping a teacher with the Oakland School District determine the feasibility of establishing a computer network between the Chabot Science Center and several schools. The system would be used for computer assisted instruction.

Bettie Myers, retired computer technician from Computer Operations, and Jim Tracy, retired physicist from A Division have helped in the LLNL Science Education Center so that classes for gifted students learning Logo would not be interrupted.

George Sutton, a mechanical engineer in the Materials Fabrication Division, served on the Industrial Advisory Committee of the Oakland Unified School District as they planned a vocational program in fabrication. He helped set curriculum and establish goals.

LLNL Technical Volunteers • P.O. Box 808, L-795, Livermore, CA 94550 • (415) 423-4902

Dave Dirks, technical associate in the EE Telecommunications group is helping the Livermore Police Department evaluate video equipment for Department use.

Jean Shuler, a computer scientist with the MFE Computer Center and Barry Bowman, group leader in Mechanical Engineering, are volunteering at Buenas Vidas Youth Ranch teaching math to the students there. Jean says the work is very satisfying. She likes the kids and it's exciting to see the improvement they make. One boy who was told he'd never multiply is now not only multiplying but beginning to divide. A girl who was failing is now getting A's in geometry.

Jim Tracy, retired physicist from A Division, and Bettie Myers, retired computer technician from Computer Operations have been helping in the Science Education Center one afternoon per week so that Steve Sesko could teach Logo to a group of gifted students without interruption.

ENERGY CONSERVATION VOLUNTEERS NEEDED

The Livermore Power Posse is looking for volunteers. The City of Livermore's effort to reduce domestic electricity consumption during peak summer use periods won awards from PG&E in 1984 and they are going to try it again this year. If you have expertise in the area of energy conservation and would like to be part of a group evaluating proposed energy saving projects call Candy Simonen at 3-4902.

LLNL Technical Volunteers
Candace Simonen, Coordinator
Lawrence Livermore National Laboratory
P.O. Box 808, L-795
Livermore, CA 94550

Technical Volunteers

Lawrence Livermore National Laboratory

January 1986 Volume 3, Number 1

TECHNICAL VOLUNTEERS newsletter — to inform LLNL technical volunteers of the activities of the program and opportunities for volunteer service.

HELP NEEDED

Do you like to solve problems? Do you like to design or tinker with mechanical or electrical devices? Would you be interested in helping handicapped children or adults? The LLNL Technical Volunteers program has received requests for help designing or modifying devices to help handicapped individuals. If you would like to consider working on projects like this call Candy Simonen at 3-4902.

TECHNICAL VOLUNTEERS IN ACTION

- Joe Sefcik, a nuclear engineer with the Special Projects Division, and Carl Lindeken, a retired chemist from Hazards Control now consulting with the Environmental Protection Group, advised the City of Fremont in the hiring process for a consultant to prepare plans dealing with industries using hazardous materials near residential zones. They will also review the consultant's work when it is completed.

- Ted Hamm, an electronics engineer in Z Division, is helping the Livermore Library select a device which will count library patrons without interfering with the Library's detector system.

- Cherie Jo Patenaude, a computer scientist with Computations, is helping the staff of the Tri-Valley Haven for Women learn to use their Osborne computer for mailing lists and bookkeeping.

- Virginia Leimbach, a retiree from Human Resources specializing in personnel policies and procedures, is working with the American Association of Retired People on a project to determine what practices and procedures older workers are affected by in the workplace. She has just returned from an expenses paid training trip in Washington, D.C. in preparation for this project.

- Mark Strauch, an electrical engineer working on the MFTF project, is serving as a liaison with Granada High School for the San Francisco Bay Area Engineering Council. He will offer assistance to the school counselor regarding engineering education, arrange for candidates for an engineering scholarship, and arrange for speakers at the school on engineering topics.

- Sam Coleman, a computer scientist with Computation, is helping the Valley Volunteer Center staff learn to use their Apple IIe and VISICALC to generate financial reports. He is also helping them look for general ledger software for the Apple IIe. If you have had experience with any good software for this let Sam know.

LLNL Technical Volunteers • P.O. Box 808, L-795, Livermore, CA 94550 • (415) 423-4902

- Carol Hunter, a programmer with Computation, is also helping the Valley Volunteer Center with their Apple IIe. She is helping them with a program which will query users for input for form letters.

- Bill Porch, an atmospheric physicist with G-Division, is working with a group of other Laboratory employees to install a NASA surplus solar telescope near the Visitors Center. The telescope would be accessible to the public and hooked up to a television monitor in the Visitors Center.

LLNL Technical Volunteers
Candace Simonen, Coordinator
Lawrence Livermore National Laboratory
P.O. Box 808, L-795
Livermore, CA 94550

Dyl[illegible]

TECHNOLOGY TRANSFER

NAVAL AIR DEVELOPMENT CENTER, WARMINSTER, PA.

EDITOR: J. BORTMAN

VOLUME 12, NUMBER 1
SPRING, 1984

TECHNICAL VOLUNTEER SERVICE - PROGRESS REPORT

Over two dozen Center employees and retirees are involved in this program which provides free assistance to local governments and community agencies. The Service is available to any group of this type who requests it. As is shown by the work performed by some of the volunteers, the requests are as varied as the qualifications that people bring to the job..

- William (Stu) Lee (retiree), the Technical Volunteer Service Coordinator, has continued to meet with local government personnel and assists in identifying technical problems that match the capabilities of the current volunteers. One such meeting, composed of the Center's technology transfer representatives, Stu Lee, and Warwick Township supervisors, covered two major topics: 1) requests for information on PVC sewer pipes and 2) federal surplus material. The Center referred the community to government reports on PVC and sent them mailing lists of sources of surplus goods.

- Mike Masington (092) has met with the Warminster Township Safety Committee and was able to assist them with their program development. He also assisted with noise abatement regarding a fire siren in close proximity to a residential area and made recommendations which helped solve the problem. Currently Mike is helping the Warminster Police Department in an environmental safety problem regarding their photo lab.

- Howard Krumboltz (retiree) assisted Charles Foell, teacher in the McDonald Elementary School of Warminster Centennial School System, in the repair of a planetarium. The company manufacturing the motor no longer makes or services the model owned by the school. Howard was able to diagnose the problem--a broken servo-transformer--and install the replacement.

- Wayne Phillips (5022) is continuing to create software compatible with an Apple II computer system as a communications aid for a severely handicapped woman.

- Robert Langdale (retiree) modified the video-monitoring system in the Warminster Township Building. He designed a specialized lens housing and designed and built a prototype mounting bracket.

- Ted Trilling (3011) and Jerry Bortman (7031) provided assistance in reviewing the computer needs of Warminster Township and helped them evaluate potential microcomputer systems.

- Dick Thomas (5043) has volunteered to work with the Technology Committee of the Hatboro-Horsham School District to study computer use within district schools.

- Howard Krumboltz (retiree) and Doug Crompton (3011) have assisted Warminster Township in locating problems and recommending solutions to a specific problem dealing with the township's public address system. Changes to the system have been successfully made. They have also investigated video and audio interference problems with township communications equipment and have made recommendations that are being implemented.

Sponsored by the Naval Air Development Center, the Technical Volunteer Services (TVS) provides free assistance to local government and community agencies. Most of the requests are of a short-term, consultative nature; the volunteers respond as their schedules permit. The TVS is not intended to compete with private enterprise; rather, it answers needs--such as the computer system modified to accommodate the needs of the handicapped woman--that are either not available or feasible through other means.

Of national interest, the TVS has also been instituted at other government laboratories throughout the country. These labs represent some of the more than 300 federal research and development centers which comprise the Federal Laboratory Consortium, a network of technology transfer coordinators whose purpose is to make federal technology available to state and local government, private industry, academia, non-profit agencies, and economic development organizations.

Further information on TVS or the FLC can be obtained by contacting the technology transfer coordinators listed below.

Mr. Jerome Bortman/Ms. Carol Wolf
Code 7031
Naval Air Development Center
Warminster, PA 18974
Phone: (215) 441-2033/1670

The Grey Underground
(A Technical Volunteer Network)

January Retiree Meetings

New London - January 6, 1982
10-12 noon
Groton City Municipal

Newport - January 4, 1982
10-12 noon
Large classroom in
basement of B80

(Reminder: local government officials are encouraged to attend our monthly retiree meeting. It affords an opportunity to introduce the skills of our retirees as well as learn about current projects in other municipalities.)

Happy New Year!!! It is usually a time to make resolutions about old habits or character defects. I'd like to ignore that tradition and instead say "Thank You!" to everyone who participated in the Technical Volunteer Service last year.

Volunteerism has become a very popular conversational topic lately. I wish I could stick each of you in my briefcase to hear some of the theoretical discussion of the anticipated problems in using volunteers. I laugh to myself when I hear general talk of the "limited" expertise volunteers could be expected to bring to municipal government. I must admit that I interrupt (with glee) to say our volunteers are, (or were) entrusted with the national defense problems. The conversation always takes on a new note of optimism after that interruption.

Washington is now gathering the necessary participants to conduct a national replication of what we do here at NUSC. I am unfamiliar with the process, but I will keep you posted as information becomes available.

Ray Hasse (R) is currently teaching at Thames Valley Technical college in Norwich. He has asked for the names of anyone who might be able to rearrange their Flex-Time schedule to substitute teach in technical areas. Also, is there anyone who would like to be added (or deleted) from our list of potential part-time technical teachers? Is so, call me at 447-4603. (Retirees as well!)

The Urban Innovation Abroad Newsletter was interested in what Joe Brancato's Public Works Dept. is doing with leak location equipment in Westerly!

The following article appeared in the November issue of their newsletter. Ideas are travelling back and forth quite regularly!

U.K. "Rent-a-Road" Proposal

No, we are not talking about tolls. A radical proposal to "privatize" Britain's $1.8 billion annual road building program is being put to David Howell, the new Secretary of State for Transport, by the road construction industry. Acceptance of the proposal would meet the concern of road builders and users represented by the British Road Federation over the government's "stop and go" policies that have idled physical plants and workers employed in road building programs.

The proposal would shift the initiative of road construction and maintenance from the public to the private sector. Instead of bidding for the construction of a length of road tendered by public authorities and paid for from Treasury funds, individual builders would propose "finance-and-build" package deals. The builder proposing such an arrangement would work out a loan package with the responsible jurisdiction's financial institutions and the central government would be asked to stretch out repayments for the road over several years according to traffic levels thus also shifting a portion of the risk to the private sector. Industry sees the proposal as a means of releasing overdue infrastructure investment from the straitjacket of public sector borrowing limits and putting to work idle plants and the 300,000 road construction workers who are currently unemployed.

Alan Osborne, a spokesman for the road builders, is quoted as stating: "For the country this scheme would permit more investment in an infrastructure that at present falls badly short and put to productive work plant and workforce that are heavily underused. For the government, there would be the chance of releasing investment without tying up funds. Roads could be built in three years and paid for over ten."

A neat idea. We'll report whether it gets off the ground in England.

The British Gas Company has an unusual "active silencer" to mask noise from a large compressor. The anti-sound source is an inverted replica of the unwanted noise.

The attenuation achieved by the Duxford, England installation is on the order of 15dB at the noise emission peak of 25HZ. Any municipal officials with single source noise problems??

Art Moorcroft has finished his project with Norwich, CT. Art did an acoustic evaluation of a siren system for them.

Rudy Croteau's acoustic expertise is in demand again. Stonington wants to upgrade its public address system but there have been problems in the past that require solutions before new equipment is purchased.

NUSC has a unique individual working at the Newport Lab on an IPA assignment.

Les Corey, an electrical engineer on loan from Southeastern Massachusetts. University is personally interested in designing devices to aid the profoundly handicapped. He has already presented a computer system (with the aid of a local Rotary Club) to a young woman with Cystic Fibrosis who had been unable to communicate with her family for 16 years. Les is particularly interested in those with neither speech nor motor control. He has a few ideas for using digital designs in specific cases. I know many of you are interested in the bio-medical aspects of engineering. If you'd like to see if Les could use some of your volunteer time help, call him at x 2476 Newport. If projects are initiated, please keep me advised so we can document the volunteer time.

Bob Kieronski (N) is going to be helping Rick Regan at Earthwise (a Rhode Island alternative energy cooperative). They have asked for his help in grant writing but are also interested in his low lead hydroturbine research.

If anyone else feels they have enough knowledge about various aspects of energy conservation to conduct workshops for their members, please contact me.

Montville is moving various departments to its new Public Safety building. Howard Beetham has asked for help in purchasing new recording equipment and some engineering handholding during the project. Greg Majewski and Dom Balducci are working with him.

A North Carolina firm seems to be working a miracle: turning sludge to useable water and clean, burnable fuel! International Waste Water Reclamation Technologies of Raleigh, N.C. has an installation already working in West New York, N. J. The mayor of West New York says "Either it is the greatest con game in the world, or its a miracle". Anyone interested in further information??

Roy Clark (NL) is investigating the Groton Library's request for assistance in maximizing use of their computer system.

Don Malaguti(N) is arranging help for Greater New Bedford Regional Technical High School. They are considering the purchase of a computer.

Ron Lefevbre is helping the Norwich Senior Citizens Center. They have a stereo, a gift, that has never worked properly. Ron has undertaken the task of fixing it.

The Mayor's office in Hobart, N. Y. has called about a severe water problem. The water is dark brown, smells bad, has a high bacteria count and chlorine makes everything worse. A call is in to the Army Engineers Waterways Experiment Station who hope they can put us on the track to help if they don't have the appropriate expertise in house.

An unusual situation exists in Hobart. We have a Technical Volunteer - Retired there, Russ Dunham, a physicist who is willing to be a technical interface between the lab and the city. Our network spreads farther afield!

A Lighting Audit Course will be taught by Roger Bavoux, NUSC Energy Coordinator. NUSC Retired Volunteers will be trained to do an audit. They will then assist in auditing NUSC buildings in order to gain practical experience. From there, we hope they can audit municipal buildings and perhaps develop some work for themselves auditing private companies. The dates for the training will be January 7, 1982 in Newport and January 8, 1982 in New London (Bowditch Auditorium, NUSC from 9-12 noon). We will send a flyer with details a little later.

Joe Vargas -- we need you to skip your curling game that day!!

I am serving on a Task force to develop a Corporate Volunteer Coordinator's Council that would serve the State of Connecticut. Our goal is to network volunteer resources of corporations and labs such as ours so people aren't sent on long distance assignments. We also hope to learn who has what kind of expertise so resources can be merged.

Also, initial discussions are taking place to arrange a workshop at the Connecticut Conference of Municipalities to educate municipal officials on how to incorporate volunteers and get the best use from their help.

Gary Woods, (N) is serving on a Task Force to help the Town of Ledyard determine their computer needs. If any of you have experience to share in this endeavor, please call him at X 4598.

I need two volunteers with writing ability who can capsulize the experience of some of the retired volunteers. This info would help municipal officials learn more about the range of technical help that can be provided. There are about 12 volunteers to be interviewed at each lab.

Bernard Hemel, X 5721, has donated his stereo system to a Colchester Nursing Home. However, the system needs speakers. Does anyone have two to donate that would handle 15W with 8 ohm impedance (in cases please). If you have these items, please contact Bernie.

Rhode Island is taking a closer look at low head hydro power for municipal use. They are looking for engineers to do some basic engineering calculations at selected sites to determine power potentials. These figures would provide "technical advice" to municipal officials on whether it would be cost effective to move into a full site study.

The New England Innovation Group will co-sponsor a short course on low head hydro. If you are interested in helping on this project, let me know so I can arrange for your participation in the one day course.

See you in January.

Donna

Donna J. Mansfield
Community Liaison Coordinator

THE GREY UNDERGROUND -

A Technical Help Network

August Meetings -

Newport

Monday, August 10 at 10:00 a.m.
Planning Dept. Rm -
Next door to Portsmouth Town Hall

New London

Wednesday, August 5 at 10:00 a.m.
Groton Town Hall -
Poquonnock Rd.
Groton

1. The brochures to publicize the TVS - Retired were passed around at our July meetings. Anyone planning to make visits to individual department heads within their community should see me to get a handfull of brochures to take along.

2. Many thanks go to Kathy Baribault from the City of Norwich who did a fine job arranging an interesting July meeting.

Some of the requests generated (and any action where taken) are:

a. Town of Groton - needs expertise in improving the flow of financial reports to the town manager. Referred to Bob Macri - CT. State Office of Policy and Management (566-8382 or 522-7387) who is a CPA whose current task is to improve financial accounting details at the local government level.

b. Police - they have just received a new computer and need advice on how to make it operational to suit their report requirements. Roy Hilt (447-4804) will make a visit to see what kind of help is needed.

c. Police - requested if any free traffic consulting information might be available. Hartford has a trained traffic consultant. On initial contact, they were at least willing to discuss the possibility of bartering the engineer's skills in exchange for telephone study assistance.

d. Groton Public Works - wants help in shaping a Townwide Safety Program - NUSC' Safety Official is recovering from a heart attack. However, they were referred to the Sub Base where Dave Luebech (449-4603) agreed to talk with them to see how he might help. I am also checking with the Coast Guard Academy to see what resources they might have available.

e. N rwich City Clerk is looking for help in creating efficient systems to handle the vital statistics and information that are the responsibility of her office.

f. Fire Chief - Harold Lamphere is just finishing a telephone survey for his department. If any town is just beginning such a study I'm sure Chief Lamphere will be happy to share his experience.

g. City Engineer - was interested in an environmental impact forecasting model for predicting the impact of development on the land. It was suggested that Aurora, Colo is already using such a model. When phoned, they indicated their model deals with fiscal impact not environmental impact. However, I have asked the question on our Local net computer Network. Any responses will be reported next month.

h. The Lighting Audit course will be taught by Roger Bavoux, Rhode Island Governor's Office. The idea is to train community college instructors in strategic locations around the state to do lighting audits. They have agreed to conduct the audits free of charge for municipalities and will provide the same service for a fee to businesses in their areas.

i. Ced Chapman has agreed to help edit, layout, and make professional comments on the Town of Groton annual report. Pat Schiedel, Asst, Town Manager has set his sights on first prize in the Annual Report Contest. Good luck gentlemen.

j. I have a very thick report on the use of ozone to purify water if any town official is interested in borrowing it.

3. To be appointed a federal excess equipment designee for your town in Rhode Island have the Chief executive officer write a letter (on official stationery) to:

Federal Surplus Property Program
State Warehouse
Box 8268
Cranston, R.I. 02920

In Connecticut, letters should be addressed to:

Mr. Walter Golec
P.O. Box 170
Wethersfield, CT 06109

4. Groton's request for another community who has established a Central Purchasing Office has been referred to both. Michelle Riba at the Connecticut Conferences of Municipalities (722-2168) and Bob Macri (phone number previously listed) they should be able to supply leads to other communities who have made that move.

5. Tiverton Fire Chief is interested in verifying an opinion that a signal bounce emminating from a new antenna can't be corrected. Bob Gunning is borrowing lab equipment to test the signal strength, direction, etc.

6. Bill McGrath, NUSC's highly respected Management Systems analyst, will teach a beginners course in systematic problem solving for municipical and federal management personnel. Please contact this office for further information. Bill's services are in great demand. However, he believes anyone can learn how to do what he does and that is why he is teaching the course.

7. Dr. Virginia Smith, Temple University, Philadelphia, Pennsylvania attended the Newport Retirees Meeting last Monday. She was very impressed with the work being done and will write a proposal to have some of our retirees go to Washington to testify before the White House Conference on Aging. A tribute gentlemen ---- and Claire ---- on the valuable contributions you are forging in this nation.

8. Our program is the only one in the country that provides technical assistance through retirees to state and local government. Another program exists at the Nation Center for Appropriate Technology that has retirees helping to build solar devices, etc.

9. I'm very proud of the achievements of each of you!!

10. Westerly, and Tiverton, R.I. have both indicated an interest in establishing a Senior Job Bank (or Experienced Citizen, Cedric!!) This would probably be the answer to how retirees could do small consulting jobs for businesses (for pay). Will keep you posted as this moves along.

11. I have spoken with regional representatives from GSA. They tell me that in order for communities to benefit from excess equipment, they must be aggressive in their pursuit of items. It would be advantageous for every community to appoint a retiree who can constantly monitor department needs and transmit those needs to the state screeners whose job it is to locate the requested equipment. As stated in our meetings, the only charge to communities is the cost of shipping the item (or picking it up).

12. Australians have pioneered the concept called "Granny Flats". It is a versatile new housing idea that places a site assembled granny cottage in the backyard of the family dwelling of adult children. The self contained unit is connected to the plumbing and utilities of the main house and is considered "temporary". Further details can be obtained by contacting the Council for International Urban Liaison, 818 18th St., NW Washington, D.C. 20006

13. Sweden has developed a new pneumatic pavement breaker rig that is safer and eliminates 90% of all vibration shocks. I'll copy the info for anyone who would like it.

14. Several German cities have reported increased efficiency and heightened public relations through the use of "deficiency reporting forms". The location of the deficiency such as a broken sidewalk, blocked sewer drain, damaged street sign, etc. is checked and sent to the Public Works Department.

15. A green house in Memphis, Tennessee derives 100% of its heat from direct solar gain and biomass sources. 540c. feet of composting sawdust is loaded into bins in the fall. A feeder pipe of nitrogen & water moisten and balances the high carbon content. Small fans force warm air into the greenhouse. The sawdust is sold in the spring as a replacement for peat moss.

See you in August, call me at 447-4603 with questions.

Municipal officials!! The best benefit to be received from this group is to attend our meetings so you have the opportunity to personally discuss the kind of help you currently need. Especially in Newport meetings we would like to see a better municipal representation.

I have been approached by an individual who is interested in hiring technical professionals on a full time (but short term) basis. He has inquired whether you all would be interested in jobs. My response was that I couldn't speak for you. However, if he writes down his requirements and provides a name, address, and phone number, I'll pass the information along to everyone, letting those interested respond on their own.

I am also interested in having the resumes of those willing to serve as consultants to business. I will file them with the Norwich Job Bank. If any company's are interested in your skills you can be contacted .

Municipal officials please be advised that a new retrofit kit (selling for $70) is currently available to replace mercury vapor street lights with new dollar saving high pressure sodium. This price contrasts with a present figure of $200 per fixture to do the same job.

See you in August.

Donna

Donna J. Mansfield
Community Liasion Coordinator

The Grey Underground
(Newsletter for the NUSC Technical Help Network)

April Retiree Meetings
Newport
Volunteer Seminar for Public Officials
Friday, April 16, 1982
Time & Place later

New London
Westerly City Hall
Wednesday, April 21, 1982
10:00 a.m. - 12:00 noon

1. NAV MAT has recognized the Technical Volunteer Service by appropriating money for the transfer of the idea to other laboratories. Well done, volunteers, well done. Your successful local efforts have been impressive.

2. For those who want to get further backup information from the Navy T^2 Fact Sheet, please use ID# 02175 and put your own address on the request form. I have been getting positive responses to this information so will keep sending it to you.

3. Connecticut College is asking NUSC to help strengthen the college's scientific dimensions. This will be done in several ways. Two adjunct appointments will be made from NUSC. These will carry a small yearly stipend and will entitle the appointee to attend Connecticut faculty meetings. If the adjunct professors actually teach a course, they will be paid at the part-time rate.

In addition, teams of three volunteers will be chosen to aid the chairmen of the Physics and Math Departments. These people will serve as advisors in matters of curriculum development, making recommendations where they feel the school could better prepare students for the work world.

NUSC volunteers will also participate along with other local organizations in a career seminar for sophomores. This will give the students a chance to interact directly to ask questions of people who are employed in different fields.

Also, the Physics Department particularly is looking for mentors for its students. We hope to have six people by fall who are willing to serve as a guide and sounding board for a bright student. Mentoring has benefits for the mentor also!!

Lastly, we will work with the Continuing Education Department and the school to arrange part-time teaching slots at convenient hours for our professional staff.

Conn is attempting to meet the challenge of a more technological future directly. NUSC employees with their highly developed skills and experience can help them in the areas of Math, Physics, Computer Science, and Management. Pfizer is being solicited to help with the Science and Chemistry Departments.

4. Russ McDonough(NL) has been appointed to the Advisory Board of Project Concern. This group works to help the prison inmates reacclimate to society after completing their sentence.

5. Paul Sullivan (those of you who get the Norwich Bulletin saw his picture in the paper!), Mike Sullivan, Stan Rupinsky, Dave Williams, Jack Griffin and team leader Alex Theodoru (all NL) have finished converting 40 drafting tables into flat work benches for use in the production line at the Easter Seal's Sheltered Workshop in Norwich.

6. Bob Warenda (NL) is helping a female Cadet at the Coast Guard Academy with information on sonar detection devices and possible techniques to determine cracks in concrete structures.

7. Rudy Croteau (NL) is back in the room acoustics business. Rudy and Mike Ahrens (NL) are helping the town of Stonington select baffling for the room where town meetings are held. Rick Denomme has provided recommendations for the purchase of public address equipment that would be correctly sized for the room.

8. Sometime back, a town reported to me they would like to sell their microfilm equipment. If that town is still interested please contact me. I have another municipal purchaser.

9. Kay Crosby (R) has designed a logo for the Technical Volunteer Service that is now in Graphics being made camera ready. She is also designing a logo for the Corporate Volunteer Committee in Hartford. That group serves as a forum to link resources within the community and the state. The Cancer Society is on her waiting list for a logo.

10. Charlie Drenzowski, (NL) is also working with the Cancer Society to help them streamline their paperwork and systems. The agency suffers from years of executive turnover. They are no longer sure which functions are crucial to the operation and which are done simply from habit.

11. Joe Vargas (R) will work with the YWCA to help them schedule their rooms efficiently.

12. Tom Wheeler, (NL) will address the statewide meeting of Connecticut Town Clerks on the subject of Computers (June 8).

13. The New Haven Voluntary Action Center and the Danbury YMCA were referred to their town representatives for furniture and perhaps the use of a temporary building from the State Excess Property.

14. One of NUSC's own has a problem she is seeking help with. Alby Johnson has a house leak, the water comes in <u>over</u> the sill board. She has put on a

new roof, new siding, replanted the foundation plantings and had lots of professional "fix it" people in to solve the problem. After all this, the corner was still wet during the last rain storm. Her concern is potential foundation rot. This is an unusual request but if anyone has any ideas, Alby would appreciate the advice.

15. Tom Perella, (NPT) will help the New England Innovation Group select a word processing software package and to advise them how to incorporate their computer into the operational functioning.

16. Paul Miscisco (R) has been appointed a Westerly Federal Excess Equipment purchaser. Paul has agreed to be on the lookout for good items for other towns and non profit groups. If you need an item, please call Paul at (403) 596-5018 to get on his "wish list."

17. Roger Greenough (NL), John Fay (NL), and Don Farrington did an excellent job at the YWCA Sing-a-Long. Many more singers are needed. Plans are being made for another session and to move the program outside during the summer.

18. The town of Stonington is considering the purchase of word processing equipment. They will talk to Carl Kindelien (NL) about how to assess their needs. If they decide to purchase, Roger Read will help them try out various kinds of hardware.

19. Jim Hazlin (NL) is making a cabinet for the speakers Fred Williams (NL) donated to a Colchester Nursing Home. This group effort means music for that home since Bernie Hemel already gave them the rest of a stereo system. Good coordination guys.

20. Ludwig Sorrentino (NL) has volunteered to rerun the solar hot water analysis that were mis-run in haste. The Energy Extension office, closed for lack of funds has the program. Can I get volunteers with TI programmable calculators to offer this service?

21. Connecticut is having a meeting April 20 to try to network stable resources for energy. Our volunteers may be called on to help in this effort.

22. Waterford had a leaking trailer roof. Les Greiner recommended a product to seal it.

23. The Federal Highway Administration has developed a computer traffic simulation program that can help state and city highway officials achieve savings in fuel consumption and design costs. Called NETSIM, more information can be provided by Richard Reilly, (202) 426-0660.

24. The Navy has designed a concrete sheath for underwater cables that follows the marine floor contour.

25. The Air Force Civil Engineering Center has done a study that tells the various percentages of waste fuel, oil, and lubricant that can be used to supplement heating plant fuel. More info anyone?

26. Electronic ballasts for flourescent lamps dim and brighten in reaction to ambient light. Forty percent savings are predicted.

27. Arnold M. Rosenberg, W.R. Grace Company, Columbia, Maryland, was given a national innovators award for a concrete additive that protects steel reinforcing rods for up to 50 years.

28. Don Malaguti will serve on an advisory committee for the Greater New Bedford Regional Vocational Technical School's purchase of computer equipment.

29. London has introduced sponsored trash cans. Businesses subscribe to the program for $130/ year and are allowed to advertise on their trash receptacle.

30. Space is at a premium in Japan's tightly packed cities where the average family home is about a third the size of its U.S. counterpart. What has kept the residential environment livable in these crowded conditions is employment of the same space for different functions at different times. It allows the same room to be used for eating, sleeping, study or entertainment with the accessories necessary for each function brought in and then removed and stored. An application of the "flexscape" concept to the public sector, one that saves scarce city resources and allows different population groups to use the same facility at different times is reported below from Kobe, a leader in civic innovation.

With Japan's population density one of the highest in the world and urban land consequently trading at inordinate cost, public authorities have found it extremely difficult to assemble adequate parcels for neighborhood parks and playgrounds. In deciding on the design of a new elementary school, Kobe city officials have developed a plan to ensure the most effective use of limited public space. Applying the "flexspace" principle, it provides for the multiple use of the same land and the same facilities by both students and the general public at different times of the day.

More than a third of the parcel accumulated for the school was made into a public park the use of which is reserved to students during school hours. Similarly, the school grounds and facilities are not reserved exclusively for students but are designed for shared use with the public. This has been accomplished by separating administrative offices and classrooms from those facilities, such as the library, meeting rooms, and the gymnasium which are intended for public use after school hours. These facilities, placed in adjacent buildings, separate the classroom area from the planned community of shops and high-rise housing which abuts the school on both sides. The division of function is also observed in the design of the classroom complex where a playground separates the classroom buildings devoted to the lower and upper grades.

31. Germany has developed new dual chamber garbage containers that allow source separation into the truck.

32. Germany has also developed a floating desalination plant for sea coast villages who need to make drinking water from sea water.

-4-

33. An anemometer is needed by Jim Gallagher for a study at East Lyme High School. Is there one around the lab to be borrowed?

34. The New England Innovation Group through this office has requested a volunteer to help create alternate financing for non-profit agencies who need capital to carry out energy conservation measures. Through our new network, this request was directed to the Hartford insurance companies who have much more expertise in financial matters.

35. I am now beginning to work with municipal department heads to train them how to use volunteers. On April 16, I will do a seminar for South County officials. I would like the NUSC Technical Volunteers Retired to attend that meeting instead of having our regular meeting. I will let you know the place and time by separate letter. (Rhode Island only)

36. Businesses and business organizations are beginning to look to NUSC employees for innovative ideas that our personnel are developing on their own time. If you have such an idea that might be appropriate for a high technology industrial park, an innovative process for industry, or a good idea you might be willing to share, let this office know.

37. Adam Jilling (NPT) has designed a voice actuated switching system for use by a disabled person in controlling a basic communications device. The user is capable of making sounds but cannot speak. The unit is part of a system Les Cory (NPT) is designing to convert unintelligible sounds into synthesized speech.

The switching system was built by Larry Chace, then an employee of OTI. Les Cory says the device is extremely useful as a diagnostic tool in his work with people with severe disabilities.

38. A Connecticut woman has been discovered in an institution; thought to be retarded, Les says recent tests have proved she is intelligent but needs a means to communicate. Anyone interested in working on this project???

39. I will be making a presentation in April for a New England regional meeting of municipal officials to tell them of our successful volunteer program and how we work with municipal officials.

40. The City of Fall River is interested in determining whether a Central Personnel Department would be cost effective in their city. They will make an appointment to talk with Joe Murphy about how to do the study. They also hope some of the Fall River retirees could help with the project.

Thank you for the continuing help!

DONNA MANSFIELD
Community Liaison Coordinator
(203) 447-4603

DEPARTMENT OF THE NAVY
NAVAL UNDERWATER SYSTEMS CENTER
NEWPORT, RI 02840

New London Laboratory
New London, CT 06320

IN REPLY REFER TO:
10:MMM:rpn
5050/TT
Ser: 310-788
November 1983

MEMORANDUM

From: Office of Research and Technology Applications (ORTA) (Technology Transfer, Code 10)

To: Technical Volunteers, Retired Technical Volunteers

Subj: NUSC Technical Volunteer Service Update

1. Thanks to all of you who responded to our recent survey.

2. Effective now, we plan to again issue periodic memoranda to keep you up to date on volunteer activities.

3. Our memo will consist of three sections:

a. Volunteer Activities. News about the work currently being done by you, the volunteers. Please let us hear from you about volunteer work you're doing that we aren't aware of.

b. Technical Products and Processes. Information of potential use to your communities, or to you personally. We will either have, or be able to obtain, contact data or backup material for the items in this section.

c. Assistance Requested. Calls for help you may want to respond to.

4. We'd appreciate comments from you, now or any time in the future, to any of the following:

Peg McNamara
(203) 447-4590 / NLON Ext. 4590

or

Jack Griffin
(203) 447-4116 / NLON Ext. 4116

both

Code 10
Naval Underwater Systems Center
New London, CT 06320

or

Gerry Elias
(401) 841-3435 / NPT Ext. 3435
Code 71
Naval Underwater Systems Center
Newport, RI 02841.

DEPARTMENT OF THE NAVY
NEW LONDON LABORATORY
NAVAL UNDERWATER SYSTEMS CENTEI
NEW LONDON, CONNECTICUT 06320

Volunteer Activities

o We've recently established linkages with Volunteers in Action, Inc. (VIA) in the Newport area, and the Voluntary Action Center of Southeastern Connecticut. Both are nonprofit, United Way-supported organizations. We've agreed to try to find volunteers in the NUSC system to assist with requests they receive that are either strictly technical or have a technical component. Requests will be made through the Technology Transfer Office, and we'll do the initial screening to assure applicability to TVS. We expect to be putting out calls for help in the future.

o A group coordinated by Ron Rasi (Code 34, L) has been working with the Easter Seals Center and the Little White School House to identify areas wherein volunteers might help. The primary focus has been on problems that preschool cerebral palsy children have in playing with toys, mobility, communications, and self-help. A workshop was held on 21 October 1983 with those organizations and NUSC volunteers to learn more about the general problem. Follow-on meetings to identify specific needs and to set priorities are being held in November. Participants so far have been Gerry Holmberg (Code 34, L), Art Moorcroft (Code 33, L), Rolf Kasper (Code 44, L), George Panko (Code 33, L), Kevin Cavanaugh (Code 32, L), and Fred Williams (Code 34, L). Solutions could make use of pressure switches, mercury switches, computers, etc. Anyone interested in participating, please call.

o A group consisting of Peter Trask (Code 34, L), John Merrill (Ret., L), Peg McNamara (Code 10, L), and Dave Dence (Code 34, L) has been working with the East Lyme, CT, school system since last January to help them develop a computer curriculum for grades K through 12 as well as the long-range plan for associated hardware and software. The plan was recently approved by the East Lyme School Board. A part of the program was a computer awareness workshop for the faculty which was held on 19 October. The workshops were: "Introduction to Hardware and Software," by Don Quigley (Code 73, L); "Business and Social Applications of Computers," by Mary Lee and Suzette Cassese (Code 74, N); "Legal Issues," by Joe Murphy (Code 08); and "The Smart Machines and Their Applications," by Jim Shores (Code 32, L) and Bob Bernecky (Code 32, L). Brief resumés of these presentations are available.

o Rick Denomme (Code 41, L) and Savas Anthopolos (Code 33, L) completed a study of the sound system for St. Sophia Hellenic Orthodox Church in New London. They analyzed needs and made recommendations. A new system has now been installed in the church's community center.

o Rolf Kasper (Code 44, L) attended the Council for Exceptional Children Conference in Hartford. He brought back trade literature and brochures on various computer hardware and software available for education of the disabled. The literature can be borrowed from Code 10, Technology Transfer.

o Task forces have been established on municipal computer use and assistance for the handicapped. John Barkley (Code 32, L) is the coordinator for the New London computer group. Gerry Elias (Code 71, N) is the coordinator in Newport for both groups. Ron Rasi (Code 34, L) is the coordinator for the New London handicapped task force.

o Erick Walters (Code 32, L) worked with the Town of Waterford (CT) to write specs for a computer for the fire and police departments. A system has been contracted for. Rick is also on a committee to write specs for a computer for the Town.

o Ed Kazeniewski (Code 34, L), Dan Brochu (Code 34, L), and Rick Denomme (Code 41, L) are working with the Major Crime Unit, Eastern Division, of the Connecticut State Police to improve video recording techniques and equipment in the Unit's van.

o Rick Denomme (Code 41,L) has completed an analysis of the sound system in St. Mary's Church, Groton, CT. He made recommendations for some improvements, which have recently been implemented.

o Dan Brochu (Code 34, L) conducted a lighting seminar for the Connecticut State Police. He instructed officers in techniques for illuminating crime scenes and evidence which they are required to vidoetape for court records.

o Peter Trask (Code 34, L) is working on a study of computer needs for the Town of East Lyme, CT.

o Scott McCarthy, Rother Hodges, Herman Urban, Dan Juttlestad, George Desrochers, Mark Hassel (all Code 35) and Bob Goncalo and Harry Peitavino (both Code 42), all Newport, have been working on several projects for the Newington (CT) Children's Hospital. They've developed a computer software program and adapted a light pen for use on the hospital's Apple computer which can be used both for a fine motor training project--training patients to write--and for a gross motor control project, for example control of the patient's head movements. Both adaptations are in the form of computer-based games and the patient's progress can be traced by recording it on a disk.

o Don Malaguti (Code 73, N) serves on the Computer Advisory Committee for the Greater New Bedford Regional Vocational Technical High School. The school serves New Bedford, Fairhaven and Dartmouth. Originally that Committee evaluated the bids received for a computer system to be used to set up a data processing curriculum at the school. The system is now in place and the Committee now functions in an advisory capacity on the purchase of additional equipment and on curriculum development.

o Gerry Elias, Bill Cote, and Marcel Nadeau, all Code 71, Newport, assisted the Town of Tiverton, RI, School Computer Committee in determining educational requirements for computers.

o Gerry Elias also is working with Tiverton to evaluate municipal computer needs.

o Ron Santa (Code 36, N) gave two presentations on "Applications of Microcomputers for the Disabled," one at the New London Lab on 29 June, and one at Newport on 19 July. Ron reported on a workshop he attended which was run by the TRACE Center of the University of Wisconsin. The Center is nationally known for its work with the disabled. A tape recording of Ron's presentation is available for loan. Material from the TRACE Center workshop can be reviewed and selectively copied. Call Jack Griffin (X4116, L)

o Paul Misisco (Retired) is the Procurement Representative for Government-surplus materials for Westerly, RI. Paul also participates in a wide range of volunteer activities at Westerly Hospital and the Westerly Senior Citizens Center.

o Bill Bartlett (Retired) is continuing his work at the Newport Hospital. Bill is a transport volunteer and quality control expert for their nuclear radiation measuring instruments.

o Tom Galib (Retired) is a member of the Computer Advisory Board of Diman Regional Vocational High School, Fall River, MA.

o Morrie Seiple (Retired) is working with the Red Cross on Disaster Services and management, the Middletown, RI, Library on management, the Lutheran Church on management and finance, and is the Middletown Energy Coordinator.

Technical Products and Processes

o Copies of the book, When Your Child Is Hearing Impaired, A Parent's Resource Guide, are available free of charge from Daniel Simmons, 76 Holly Road, Lowell, MA 01854.

o NASA's Marshall Space Flight Center has developed a new protective face guard for firefighter's protective headgear, which can be pushed up inside the headgear when not needed.

o NASA's Ames Research Center developed a fire-retardant intumescent coating which swells upon reaction to heat. The coating is stable in the presence of water, adheres well, and is very durable. It can be used as an effective insulator to a fire or other type of heat source. Currently it's being used by AVCO's Thermal Materials Division as a protective coating on fuel hoses of inboard pleasure boats.

o A British hand-held CAT (cable avoiding tool) can detect the presence of buried cables through its sensitive antennae, a definite plus at tree-planting time. Live power and telephone cables sometimes lie just inches below ground; the electric CAT "bleeps" when passing over them. It can save park personnel who plant or replace trees in pavements from serious injury.

o A hydrocarbon gas detector, an outgrowth of an electronic signal conditioning system developed by NASA at its Langley Research Center, is a useful tool during arson fire investigations. The device is capable of detecting the presence of gas or vapors several days after a hydrocarbon-caused fire. It can detect the presence of a hydrocarbon gas in a concentration of less than fifty parts per million. The hydrocarbon detector has been used effectively as a means to provide physical evidence for use in court actions in a timely and relatively inexpensive manner.

o Graffiti removal is an expensive problem. When graffiti cannot be removed with a mild detergent solution or with the more aggressive use of hydrocarbon blends such as gasoline or mineral spirits, there are other effective options. The Navy's Civil Engineering Laboratory has developed a series of guidelines that may be followed in order to remove graffiti.

o A xenon-arc light developed at the Johnson Space Center as a solar simulator has been adapted for commercial use. It is hand-held, weighs just over 7 pounds, can illuminate targets at distances in excess of one mile, and can be powered from a portable rechargeable power pack. As a police or security piece of equipment, it allows search of more territory in less time due to the intensity of field illumination. It is useful as a harmless "blinding" weapon at distances of up to 500 yards.

o Epoxy Thermoplastic (ETP) is a generic pavement marking material, jointly developed by the Southwest Research Institute and the Federal Highway Administration. It can be applied with equal success on asphalt and portland cement concrete pavement, and on bare pavement or previously painted stripes. Field tests have been conducted to evaluate durability and performance under extreme traffic and climatic conditions. In each case, the demonstrated service life has far exceeded that of traffic paint in the same location. It appears that ETP costs approximately twice as much as conventional traffic paint. Where it has outlasted traffic paint by a factor of 5, it would save 60 percent of the cost of the paint. Even if no monetary savings accrued, intangible benefits are derived from the reduced risks to crews and motorists through the elimination of one or more striping operations, and the provision of year-round markings in areas where conventional markings are absent through a portion of the winter.

o Rick Walters (Code 32, L) has literature to share with interested volunteers on the View Point System which allows computer entry via a touch panel with 260 points on the screen. Up to 51 menus. Infrared sensing, so any object can be used to touch the screen. Rick can be reached at X4652 or X4123. Kevin Cavanaugh (Code 32, L) reports that the Advanced Research Display section in Code 32 has a VT100 equipped with a similar panel. Paul Boivin has demonstrated the system in the past.

Assistance Requested

o We need volunteers interested in analyzing room acoustics and making recommendations for improvement. Training will be provided. The first session will be in early December, so please call soon.

o If you're interested in working with the handicapped, and want to know more about the work for Newington Children's Hospital mentioned in this memo, let us know and we'll arrange a discussion session.

Announcement

o The Technology Transfer Society will hold its annual meeting this spring in Boston. If you're interested in additional information or in Society membership, call Peg McNamara (X4590, L) or Jack Griffin (X4116, L).

Technical Volunteers

Lawrence Livermore National Laboratory

January 1984 * Volume 1, Number 1

This is the first issue of TECHNICAL VOLUNTEERS, a newsletter to keep LLNL technical volunteers informed of activities of the program and opportunities for volunteer service.

PURPOSE OF TECHNICAL VOLUNTEERS

The Technical Volunteers program has been established to help local communities combat increasing technical problems in the face of dwindling tax revenues. It helps Lab employees and retirees find volunteer opportunities where their talents can make a significant contribution.

In addition, the Technical Volunteers contribute to the Laboratory's implementation of the Stevenson-Wydler Act making the technical expertise of the Laboratory available to the community.

WHAT KINDS OF PROBLEMS WILL TECHNICAL VOLUNTEERS HELP SOLVE?

Technical Volunteers will not compete with private enterprise. They take on projects of a size and nature reasonably tackled by volunteers working on their own time without pay and without requiring the use of Laboratory equipment or material. Because we focus on projects which would make the technological expertise of the Laboratory available to the community, we refer projects of a social service nature to other volunteer organizations such as the Valley Volunteer Center.

Some projects are handled by a team of volunteers with different skills and expertise.

Although volunteers will help in establishing specifications and evaluating bids to see if specifications are met, they will not recommend purchase of specific brands of equipment.

LLNL Technical Volunteers • P.O. Box 808 L-700 Livermore CA 94550 • (415) 423-4902

TECHNICAL VOLUNTEERS PROGRAM KICK-OFF

After several months of trial operation limited to projects in the Livermore/Pleasanton area, the Technical Volunteers program announced its readiness for full operation at the recent meeting of the Alameda County Mayors' Conference. Mayors and City Managers from fourteen Alameda County cities heard Volunteer Coordinator Candy Simonen describe the program and the skills and interests of the Lab volunteers. The service is now available to local governments, schools and service groups beyond the Livermore area, limited only by the willingness of volunteers to travel.

TRIAL PERIOD SUCCESS

After a low-key recruiting effort more than 300 Laboratory employees and retirees returned questionnaires offering to participate in the LLNL Technical Volunteers. They offered a range of skills including virtually every area present at LLNL.

Although the program has only recently been widely announced, we have already received 54 requests for volunteers. Twenty-eight of these have been filled, three with retirees and 25 with current employees. Where someone else might more efficiently give help we have referred requests to others. Requests have been referred to LLNL Tutorial Program and Speakers Bureau as well as to Valley Volunteer Center.

TECHNICAL VOLUNTEERS IN ACTION

David Banner, physicist from Z-Division, is serving as a consultant to the advanced math teacher at Livermore High, Nelson Fong.

Dan Moore, biostatistician from Biomed, has filled two volunteer jobs. He helped Livermore's RIDEO bus system staff learn to use the City's computer and VISICALC to figure bus schedules. He also helped the Livermore library use their Apple computer to analyze the results of a users' survey to determine which services could be cut with least impact to library users.

Karl Johnson, retired mechanical technician supervisor, Hank DeCoursey, retired mechanical designer and tool engineer, and Al Chesterman, retired mechanical engineer, are putting their expertise to work restoring the historic timber wagon in Livermore's Hansen Park.

Bill Neef, a mechanical engineer with the magnetic fusion program, is designing a shelter to protect the timber wagon from further weathering once it is restored.

TECHNICAL VOLUNTEERS IN ACTION (Continued)

Charles McMillan, a physicist in B-Division is making suggestions to improve the acoustics in three Valley facilities - the Shannon Park Community Center in Dublin, the Amador Auditorium in Pleasanton, and Walnut Grove School pod classrooms in Pleasanton.

Bill Porch, an atmospheric physicist with G-Division, helped the City of Pleasanton evaluate a computer model of traffic generated air pollution.

John Rhodes, a computer scientist from the Computations Department, served on the consultant selection committee for the City of Fremont as it hired a consultant to advise in the purchase of a computer system for the City. He will also review the project as it proceeds.

Cheri Jo Patenaude, also a computer scientist with Computations, is helping Carolyn Heath, a teacher at Livermore High School, use her classroom Franklin computer with her learning disabilities class.

Roy Lindsay, a computer specialist with Administrative Information Systems, is helping Livermore Area Park & Recreation District determine specifications for a system to replace their old Burroughs bookkeeping machine.

George Bush, systems physicist in L-Division, is helping the Pleasanton Recreation Department investigate means of heating their swimming pools more efficiently. The Energy Volunteers Group is giving him advice and support.

TECHNICAL VOLUNTEERS WILL BE FEATURED

Lab Quarterly staff member Charlotte Celian has been interviewing volunteers who are currently working on volunteer projects as well as people from the agencies they are serving. Look for these stories in the winter issue of the Quarterly and find out more about what our active volunteers are doing.

VOLUNTEER HELP WANTED

Students and teachers at Mission High School in Fremont have built 16 Heathkit Zenith computers. These are currently being used in a short before-school computer concepts class for all sophomores at the school as well as for five scheduled classes teaching programming in BASIC. Next school year they plan to add a class in PASCAL. The teacher would like a volunteer who could give advice and suggestions for the new course in PASCAL. If you would be interested in assisting, call the LLNL Technical Volunteers office at 423-4902.

LLNL Technical Volunteers
Candy Simonen, Coordinator
P. O. Box 808, L-700
Livermore, CA 94550

By: [illegible]
Patricia Traendly
Thomas Wagner

TECHNICAL VOLUNTEERISM:
New Help for Beleaguered Municipal Budgets

What does a municipal official do when the high technology salesman comes to town and gives a pitch in a language that sounds very foreign? What do the police do when five bids come back for the new two-way radios,each bid varying in cost and capacity? What does a Cerebral Palsy victim do when she has never been able to speak? Simple. They all do the same thing -- they call in a Technical Voluntee[r]

A Technical Volunteer is an engineer, scientist, technician, or other technica[lly] trained individual who donates personal time to help solve local community problems. They help municipalities, state governments, non-profit agencies and, in some cases, even small businesses.

In the examples cited above, Technical Volunteers often sit in with municipal officials on vendor demonstrations. They ask the clarifying questions that ensure the municipality knows the facts and technical capabilities of products. In the case of two-way radios, volunteers discuss their final use with police officers making certain that what is purchased suits their needs exactly, neither being too weak nor too powerful.

In the last case, a talking computer was created for the woman with Cerebral Palsy. In cooperation with a local Rotary Club and National Guard unit who paid for the hardware, engineers and computer scientists donated their time to do softwar[e] programming and adaptive engineering which made the machine operable in spite of the young woman's disabilities.

Why do highly-skilled personnel donate their time? Four years of experience with the nation's first formal Technical Volunteer Service at a Federal R&D laboratory suggests several answers:

1. Formal research projects are long term in nature. Volunteer projects, in contrast, produce quick results on a small investment of technical time.
2. For those who work for Department of Defense laboratories, much of their war-related research will hopefully never be used. Community technical assistance provides technical volunteers with clear examples of using one's experience to solve immediate and identifiable problems.
3. Successful researchers move up the career ladder into increasingly administrative positions. These positions require less hands-on use of technical skills. Engineers often miss that hands-on experience.
4. Volunteer projects sometimes occur in the category of the scientist's avocation. This gives them the opportunity to gain additional enjoyment from normal leisure time activities.

Why would a Federal R&D laboratory encourage its personnel to get involved in the community? Because since the early 70's, Technology Transfer laws have encourage government-sponsored R&D centers to spin the benefits of taxpayer-financed research into the broader community. Out in the community, new technology can serve a larger segment of the American public. Examples of adapted technology are the heart Pacemaker, the bullet-proof vest, and freeze-dried coffee; all items that originated with Federal research.

Along with new products and innovations with potential to spur the U.S. economy, the 1980 Stevenson-Wydler Act officially called for R&D laboratories to provide technical assistance to state and local government when the laboratory possesses the appropriate expertise.

The kinds of volunteer requests that come to a federal laboratory vary -- sometimes the call is only for information -- "What is the continuous application process a Florida city uses to lower road repair costs?" "Where can our municipal officials go to take courses in Time Management and Intergovernmental Communication?" This type of question is usually answered fairly quickly through the normal Technology Transfer (T^2) network. This network links federal laboratories to innovation groups, to university researchers, to data bases, etc. Generally, the answer to an information question is found in a single phone call. Clearwater, Florida, is the city that has lowered road care costs through the continuous application of emulsified asphalt. Municipal officials may attend Federally-sponsored courses so long as there is class space. They pay the same fee as Federal-government attendees.

Other requests require more personal technical assistance: People in a nearby community can't hear each other speak at town meetings. A volunteer acoustics expert makes recommendations the town's contractor can follow to solve the problem economically

The first Technical Volunteer Service was developed by a consultant of the New England Innovation Group at the Naval Underwater Systems Center in New London, Connecticut, and Newport, Rhode Island. From a small beginning, the group has now grown to nearly 400 active and retired volunteers registered to provide volunteer technical assistance.

The success of the program has resulted in a widespread movement among other Federal R&D laboratories to organize Technical Volunteer Services of their own. Laboratories in California, New Mexico, Pennsylvania, and Maryland are currently engaged in a national demonstration project.

The New England Innovation Group, in cooperation with the Administration on Aging, seeks to establish Technical Volunteer Services - Retired near laboratory sites across the country. These services will combine retired federal and technically skilled business retirees in order to enhance the technology transfer process. The user will remain the audience mentioned before: state and local government, non-profit agencies, and small businesses.

Small business benefits in the following ways: knowledge about new product development for potential additions to their product lines, or the application of new technology to current production processes. Example: a local company asked for a microwave and ultrasound expert to sit in on a company brainstorming session to determine whether either of the aforementioned technologies could be used to clean paper pulp.

Each of the nation's 779 Federal R&D laboratories has a different sponsoring agency, i.e., Agriculture, Health, Energy, Department of Defense, etc. In addition, the research agenda varies from laboratory to laboratory. Requestors, therefore, must understand the laboratory's mission statement, learn which technical skills are required to carry out the mission, i.e., chemists, biologists, geologists, physicists, etc. From there, the municipality's task is to aggressively search out ways in which that particular kind of expertise can be applied in one's own community.

Often, it is found that even though the nearest laboratory does not have the required expertise, they are able, through their networking ability, to put a user in touch with the laboratory that does have it.

Communities know that legislation is now on their side when they request technical assistance from a Federal R&D laboratory. However, they must also understand that this is a new undertaking. There may be problems with the process in the early stages. However, the NUSC experience proves the advantages are certainly worth the growing pains for municipalities.

A Users View:

How can communities with limited administrative resources and funds solve problems and seek out innovative ways of saving scarce taxpayers' money? In Westerly, Rhode Island, a community of 18,500 persons, we used a Technology Transfer Program and their Technical Volunteer Service to do just that. The program is sponsored by the Naval Underwater Sound Labs of New London, Connecticut and Newport, Rhode Island.

The Town first became involved in the program through its Town Manager Glenn J. Miller. Previous to coming to Westerly, he was Assistant Town Manager of Groton, Connecticut where he became aware of the Technology Transfer Program and its potential to provide municipalities with a multitude of professional and scientific skill.

In Westerly, Mr. Miller appointed certain members of his departmental staff to attend periodic Technical Volunteer meetings held by NUSC. When specific municipal problems arose Mr. Miller or his staff contacted the Coordinator of the Technical Volunteer Program for possible assistance. These contacts led to some important money saving projects being undertaken. This assistance, information and technical expertise came at little or no expense to the Town. This resulted in a Technical Volunteer Program that was well worth the administrative time and effort required of the Town.

Municipal participation in the Volunteer Program was facilitated by a coordinated approach to set up lines of communication between users and the various technical volunteers. First, labs held meetings periodically at various accessible locations. These meetings were attended by both actively employed and retired volunteers as well as local officials who were encouraged to discuss their ongoing problems. Often ideas for solutions to problems came from other municipal officials in attendance who had already faced similar problems. These meetings allowed officials to meet the retired volunteers who lived in their respective communities. From these initial contacts a working relationship was built between local officials and their own concerned citizens and taxpayers. Many common goals were acheived in this manner.

In addition to regular meetings, monthly newsletters were sent to local officials which listed the activities of volunteers, recent requests from communities and general information on innovations that had potential municipal applicability. The newsletter, meetings and accessability of volunteers gave local officials a general overview of the kinds of human resources available for problem solution through the interchange and exchange of information and ideas. Westerly took advantage of this program and was able to obtain the following positive results:

1. Leak Detector:

The Town of Westerly operates a municipal water system which pumps over two million gallons of water per day. This system provides water to most homes and businesses in Westerly as well as most of the adjacent village of Pawcatuck, Connecticut. The system was first built in the late 1800's and therefore contains many old and deteriorated water mains. In addition to age the Ph of the water is such that deposits have accumulated in lines adding to flow problems as well as accelerating the deterioration of the water lines.

In recent summers during peak water demand, system problems have created water shortages. In comparing the volume of water pumped from the pumping stations with that metered at the point of use, the Town was finding a considerable amount of unaccounted for losses. It was felt that the losses were due to unseen leakage. Then Public Works Director Mr. Joseph Brancato contacted the Technical Volunteer Service to find out what the state of the art was in modern leak detection equipment. Through a literature search and contacts made by volunteers, a firm out of Texas was contacted.

This effort led to the purchase of a leak detector which uses sophisticated listening equipment. The equipment was installed in a van, and a crew was trained by the manufacturer. This equipment has been used to locate many leaks through out town. It is anticipated that the savings due to plugged leaks will easily pay for the initial investment in less then three years. In addition, the accuracy of the equipment in terms of pinpointing leaks is reducing the amount of site work previously encountered using the hit or miss method. Finally, other municipal water compaines have expressed an interest in this equipment and consideration is being given to lease it and the crew to these municipalities thereby generating additional revenues to offset the original capital cost.

2. Consultant Proposal Reviews:

Small communities such as Westerly are limited in certain areas of expertise. The normal process is to hire consultants to assist in providing this expertise. Often projects are too small or available funding is limited thereby precluding towns from hiring this expertise. The expertise needed is often limited to understanding specifications and reviewing bids to make sure the items to be purchased are in fact those which are needed to undertake a certain project. In these cases, the Town turned to volunteers with expertise in these areas where the advice was needed.

For example, the Town received assistance from a computer specialist in reviewing different computers for use in municipal government. Through this expert we were able to quantify our computer need and establish the type of computer that would fill those needs. In addition, this volunteer assisted in interpreting and explaining the various software and hardware available thereby giving the decision makers sufficient information to make the best choice possible keeping in mind price and expandability. The result was the purchase of a computer at considerable savings over others available.

Other specialists were used in this manner. A chemist was contacted to assist in determining which chemical process was most effective and efficient in controlling the Ph of the Westerly Municipal Water System. This included examining factors such as ease and safety of handling different chemicals, the manner in which they were mixed into the system and, of course, cost.

A retired planner assisted the Town Manager's Office in preparing various option papers on the establishment of a Town Planner's Office. This included a literature search as well as visits to planning departments in the region to ascertain the function and role of planning agencies in municipal governments. Although the Town has yet to hire a planner, the information was valuable in making a case for the position. Other specialists were used to assist department heads with projects such as preparing a new water and sewer rate structure plan and to search literature sources for informatio unobtainable through available channels.

3. Surplus Property:

One of the most successful projects to come out of the Technical Volunteer program has been the establishment of a process by which the Town can gain access to federal surplus property. The original idea was presented by a retired volunteer and resident of Westerly, Mr. Paul Misisco. Speaking as both an advocate of reuse of federal property and as a resident taxpayer, he pointed out the potential taxpayer savings available. Through administrative personnel, department heads and leaders of non-profit agencies in town were contacted. An ~~informal~~ informational meeting was held for these potential users with Mr. Misisco and the State Agents in charge of Federal Surplus Property distribution. Each Director was asked to prepare a wish list that was sent to the State Agent. Immediately upon initiation of this process, federal goods began to filter down to these departments and agencies. Mr. Misisco acted as the Viewing Agent for the Town. He would go to area government bases to view available property and report back to the local Town Coordinator as to what was available, its condition and what had to be done to acquire it. Once the Town expressed interest in an item, Mr. Misisco made the contact to initiate the needed paper work, and the local coordinator was given a place and time to pick it up.

Items received include calculators, typewriters, desks, drafting tables, movie projectors, chain hoists, various paints, pipe, I-beams, lockers, duffle bags, boots, ponchos and a two thousand gallon fuel tank. Some of the equipment needed minor repairs, but these repairs were minimal compared to the cost of purchasing similar equipment new. Many of the repairs were made by Mr. Misisco so that the equipment could be used in a new Senior Citizen Center. This volunteer's efforts for the Town and for the Senior Citizen Center has created significant taxpayer savings and has shown the Town what can be done with limited resources and a lot of energy and Yankee ingenuity.

The Technology Transfer Program and its volunteers are not a panacea for solving municipal problems or cutting costs. In undertaking such a process and incorporating it into the every day operation of municipal government, problems do occur. Often the volunteers are unfamiliar with the inherent inertia of municipal government. The closest contact has been as taxpayers looking from the outside in. Once incorporated into the system, the desire to change it overnight becomes frustrating to them as it often is to those who deal with it on a daily basis. It is important for them to realize that they are volunteers and that their recommendations and assistance is only one of the many variables which go into making a decision. The best volunteer are those who provide the most information and expertise available while knowing when toback off when other issues get involved in the decision making process.

The establishment of such a program requires some important ground rules. The volunteer should be given as complete a picture of what the situation or project is that needs to be explored. Incomplete information can lead to wasting precious volunteer time and frustration on their part and often loss of services. Chief executives should, in welcoming this assistance, establish ground rules and assign personnel to deal directly with the volunteer. This assures good lines of communication as well as assuring conformance of volunteer actions with established local administrative procedures. The Volunteer Program is relatively cost free, but we should always be grateful for the assistance and support the program by giving credit where it is due and spreading the word to other municipalities in one's area.

There are many resources available through the Technology Transfer Program. Each community uses it differently based on their own needs and the type of expertise available at their local federal laboratories. It is a resource which can provide expertise in certain problem areas. It is also a resource and a conduit for the transfer of new technology developed in federal labs to private sector users. Many adaptations of federal R & D can be used as part of the normal service delivery system of municipal governments. In the future it could even be a viable source of economic development efforts, born out of the initiative of local leaders with vision and assistance from volunteers. Technical Volunteers is a program each town should explore. It can optimize technology utilization at the local level where such resources are usually limited and expensive to acquire.

NUSC's Technical Volunteer Service honored by citation

Recently, NUSC's Commanding Officer, Captain John W. Ailes, IV, and Technical Director Earle L. Messere, were presented with a citation from President Ronald Reagan in recognition of outstanding volunteer achievements by members of the NUSC Technical Volunteer Service. The award was established to recognize, inpsire and encourage exemplary volunteer achievements in communities throughout the United States.

A letter accompanying the citation reads in part, "Congratulations on being named one of the Citationists for the 1983 President's Volunteer Action Awards. Your Volunteer achievements, as reflected in the nomination, are so outstanding . . . your significant private sector initiative contribution is deserving of special recognition." The award was presented by Ms. Nancy Plue, Chairperson of the Voluntary Action Center in Southeastern Connecticut.

Both Captain Ailes and Mr. Messere have expressed their extreme pleasure at receiving the award, and their admiration of, and gratitude to, the many NUSC volunteers, who include both present and retired NUSC employees.

NUSC's Technical Volunteer Service was established five years ago under the Center's Technology Transfer Program. Since that time, NUSC employees and retirees have given hundreds of hours of their personal time to provide technical advice and assistance to their communities in areas such as the design of emergency communication systems, room acoustics for public buildings, design of electronic interface devices for the handicapped, computer systems for municipal governments, and energy conservation techniques.

Model Program

The NUSC Volunteer Service model program is now being replicated in a number of Federal laboratories around the country through a grant from the Department of Health and Human Services and with the support of the Chief of Naval Material and the Federal Laboratory Consortium for Technology Transfer.

At the present time, task forces are being organized in the several areas that historically have developed from the past five years of effort: room acoustics, aid for the disabled, computers for local government, and emergency communications. Opportunities will be provided for NUSC volunteers to meet periodically to discuss what they are doing in their communities, and to exchange information.

Volunteers are encouraged to call Margaret M. McNamara, NUSC Technology Transfer Coordinator, Code 10, New London Extension 4590 to discuss what they are doing in their communities and their interest in interacting with other volunteers on similar problems.

Earle Messere, Technical Director, and Captain John W. Ailes, IV, Commanding Officer, accept the presidential citation from Ms. Nancy Plue, Voluntary Action Coordinator for Southeastern Connecticut. The award recognizes the work of NUSC's Technical Volunteer Service in their communities over the past five years.

APPENDIX F

NUSC TVS REPORT

NUSC Technical Document 6719
12 December 1982

NUSC Technical Volunteer Service (TVS)

Donna J. Mansfield
New England Innovation Group (NEIG)
Providence, RI

Naval Underwater Systems Center
Newport, Rhode Island / New London, Connecticut

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER TD 6719	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) NUSC TECHNICAL VOLUNTEER SERVICE (TVS)		5. TYPE OF REPORT & PERIOD COVERED
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Donna J. Mansfield		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Naval Underwater Systems Center New London Laboratory New London, CT 06320		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 707K13
11. CONTROLLING OFFICE NAME AND ADDRESS		12. REPORT DATE 12 December 1982
		13. NUMBER OF PAGES 50
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Technical Volunteer Service (TVS) Technology Transfer		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This document describes the formation and services provided by the Naval Underwater Systems Center's (NUSC) Technical Volunteer Service (TVS). The document can serve as a guide for Federal laboratories and other organizations wishing to establish a similar service among its employees. NUSC's TVS serves local governments in a three-state area with volunteer technical assistance by active and retired employees. Twelve barriers to establishing NUSC's TVS, the approaches		

DD FORM 1 JAN 73 1473

20. (Cont'd.)

used to overcome them, and the results are described. Eight steps to implementing a TVS are detailed. Examples of NUSC volunteers' services, documentation forms, and other supporting material are supplied in the figures and appendixes.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

NUSC TECHNICAL VOLUNTEER SERVICE (TVS)

Some things can be Free!

NUSC retirees act as unpaid consultants to provide services to cities and towns.

...logy Transfer Gives ...id Advice To Blind

...cently the American Foundation for the Blind visited NUSC's New London Laboratory to in... possibili... Jerry turn...

NUSC Retirees Lend Their Expertise To Communities

by Donna Mansfield, 0702

Up on rooftops. Down on all fours with an ear to the ground. Sorting the stacks of equipm... junkyard... could not fix the equipment himself, he could turn to personnel in his ... New... Dep... over a ... of stu... mer. Ded pa... its

NUSC Helps Solve Acoustic Problem...

Extensive modifications made by the City of New London to the former St. Bernard's School complex resulted in an alteration of acoustic conditions which ...

NAVAL UND...

Technology Transfer At NUSC

Technology Transfer Lends Expertise To Social Welfare

A police communications system is a logical area in which to find NUSC experts supporting the technology transfer process. The Office of Special Programs Development, Code 0702, however, is finding new applications for mission developed expertise. Broad-based medical ... social probl...

other heart muscle cells will follow suit. Patients with heart block, or those awaiting pacemaker implantation could benefit from pre-operative temporary heart rate increase...

For...

Officials Attend New London Computer Graphics Workshop

Nearly 20 state and municipal officials from Connecticut and Rhode Island attended a computer graphics workshop held at the New London Laboratory August 9. The workshop was arranged by the Office of Special Programs Development, Code ... part of an ongoing ... provide technic... and expert... ...tor. ...

Attendees ... to the wo... Frank ... in Che... ...son, Sr...

Second Technology Transfer Workshop

NUSC, in conjunction with ...hegan Community College, ...ed the second in a ...chnology transfer ...te and local ...al

turning to the Technology Transfer Office at NUSC for assistance.

James Shutt, 071, explained the system as it was designed for Old Lyme and addressed its applicability to towns of similar structure.

The Municipal Finance ...ment and its problems ...d by John Beau... ...analyst for ...ann. Col...

NUSC Volunteers Serve Their Community

Technical Volunteer is perking away like ...ter on the back of ...'s wood stove. ...ovides a friendly, low ...up between Center ... who have developed ...ills through their ...ity activities or ...ctor

area for navigational aids for their ferries; a Connecticut town needs help scheduling policemen to provide ... coverage on every shift; someone needs to know whether automobile engine anal... was available for under ... review. A request for computer engineering ... from a Conser... What ...

NUSC TECHNICAL VOLUNTEER SERVICE (TVS)

INTRODUCTION

The Technical Volunteer Service (TVS) at the Naval Underwater Systems Center (NUSC) was established in the Office of Special Programs Development to transfer Federal technology to state and local governments and the private sector. Initiated in the early 70's, this program brings greater public benefit to the American people from taxpayer-financed research and development (R&D).

Under the jurisdiction of 12 federal agencies, there are 779 Federal R&D laboratories and research centers in the United States that have the potential to make this greater public contribution. Collectively, these institutions employ approximately 200,000 scientists and engineers. The expertise of these people spans virtually every facet of science and engineering. Such an array of technical knowledge represents a priceless national resource.

NUSC has actively supported Technology Transfer (T^2) since the early 70's when administration officials began to advocate a posture change for Federally funded laboratories. Rather than focus exclusively on a single-sponsor mission statement, Federal laboratories were now encouraged to further address themselves to those problems of the American people that might come under their umbrella of expertise.

Federal research has, over time, produced impressive results. The pacemaker, an adapted technology, now aids heart disease victims. The concept of the bulletproof vest was transferred from the American soldier to the municipal police officer. A new application for Navy sonar was found in modern medicine in monitoring the health of unborn children. These are but a few examples of what is meant by T^2.

From its early days of informal advocacy, T^2 became an article of Navy policy in 1972 and Federal policy in 1980. Today, laboratories with R&D budgets over $20 million dollars are mandated to designate an Office of Research and Technology Applications (ORTA) representative to oversee this transfer function.

NUSC's longtime T^2 participation has been shaped by two constraints: Nothing in the program is to interfere with NUSC's primary Navy mission nor will the program encourage projects that compete with private enterprise.

In April 1978, an employee was hired at NUSC to develop and coordinate a local T^2 program. This person was experienced in community affairs, was previously in business, and therefore was well known in local business, municipal government, and nonprofit sectors.

Although several local T^2 initiatives were begun, one program proved remarkable in its success. That program is the TECHNICAL VOLUNTEER SERVICE (TVS). It uses the technical skills and personal time of employees to solve local problems. Essentially an employee involvement program, TVS now numbers nearly 400 volunteers, including both active and retired employees.

Much planning went into the TVS and great sensitivity was necessary in order to initiate this concept into a Department of Defense (DoD) laboratory without embarrassing mistakes. NUSC's image was always of primary concern. Careful preparation was also necessary to nourish a receptive environment for the TVS within both NUSC and the outside community.

The idea for the TVS was established by a single civic-minded employee who, on his own initiative, functioned as a liaison between his community and his workplace. When he learned that his local police force was having problems with its communications equipment, he called on fellow workers to provide free help. When it was further suspected that the town's new siren system did not operate according to specifications, he borrowed NUSC equipment to measure the siren's output. Using this approach, he was able to acquire previously unavailable sophisticated technical assistance for his community.

Having observed this "one-man operation," the Office of Special Programs Development discussed the possibility that this man's interest in helping his hometown was not unique; perhaps more employees would be interested in providing the same service to their local governments. It was decided to attempt the creation of a TVS made up of volunteers with specific technical skills who could be counted on to respond to community requests on their own time.

The benefits of such a TVS are many: Local government obtains a technical competence it otherwise cannot afford; NUSC functions, even more, as a part of the local community; research scientists and engineers experience altruistic gratification; and taxpayers get double value from their R&D expenditures.

This document outlines the steps followed at NUSC to implement TVS; but, first, the barriers that had to be overcome, the rationale for overcoming those barriers, and the results are discussed.

A cautionary note must, however, accompany the information. Supply and demand for this service must be carefully balanced so neither volunteers nor community users become disillusioned. The person selected to coordinate the program must guide TVS's community participation to ensure against volunteer involvement in highly politicized situations. TVS must be implemented with sensitivity since barriers of attitude, stereotypes, and misunderstanding might easily undermine the program's effectiveness.

BARRIERS, APPROACHES, AND RESULTS

1. Management Acceptance

Barrier: New programs of any type will not succeed unless top management can convince the more reluctant middle managers of the merit of such a program.

Approach: The Head of the Office of Special Programs Development presented the TVS concept to senior management using the example of NUSC's single civic-minded employee as evidence that such a program has the potential to work.

Result: Senior mangement approved a trial of the TVS program with these constraints: Don't make promises that cannot be fulfilled, and don't do anything to embarrass NUSC. Those constraints made NUSC's image the program's primary concern. Volunteer involvement became an instrument to enhance that image. This idea must be taken seriously by any volunteer coordinator since a volunteer, even on personal time, first represents NUSC to the public.

2. Negative Stereotypes and Attitudes

Barrier: TVS, from its very inception, had to challenge erroneous stereotypes and deal with many negative attitudes, for example,

a. Civil servants have an antivolunteer mentality.

b. Scientists won't give away skills they can sell.

c. The work of an R&D laboratory is of such a highly technical nature that there will be no application to local government programs.

d. Municipalities are suspicious of Federal help.

e. No one will value a service they can obtain free.

Approach: Instead of ignoring these negative attitudes, the TVS implementation plan was designed to challenge them through education of people inside and outside the laboratory.

Result: The fact that a TVS has been successfully operating for 4 years testifies to the appropriateness and success of that approach.

3. Unfamiliarity With User Community.

Barrier: NUSC had no experience in dealing with local governments, making it difficult to determine which sectors should be targeted by TVS for assistance and how much help to provide.

Approach: It was decided that TVS would serve primarily state and local governments. Such service would be further limited to providing a technical dimension to local decision making or problem solving. In no case would NUSC assume total responsbility for a technical problem.

Result: Although it was regularly reiterated that the NUSC volunteer could not replace the consulting engineer, some municipalities misunderstood the function of TVS and believed that the volunteer engineer would, for example, design sewage-treatment plants, solve drainage problems, or write the town's future computer programs. It, therefore, was necessary to regularly restate that TVS could not be counted on to replace the consulting engineer. Current descriptions of the service indicate that a municipality retains the ultimate responsibility for their technical problems. NUSC volunteers only add a technical competence to the town's own team.

4. NUSC Readiness

Barrier: Since a volunteer service in a Federal R&D laboratory was a new idea, employees needed to be shown how volunteers could help, management needed to know that the help was positive for NUSC, and unions had to be informed that management was not trying to get something for nothing from employees.

Approach: Regular articles were printed in the NUSCOPE (an in-house newspaper) giving specific examples of transferred technology and demonstrating how science regularly helps the community. This information campaign spanned 4 months with an article appearing biweekly. (See appendix A.)

Result: The laboratory employees were familiarized with the concept of the TVS and made aware of its emphasis. They also understood the larger implications of volunteer technical assistance and were alerted to the fact that a TVS would be developed at NUSC.

5. Employee Reluctance

Barrier: Civil servants, some of whom might be wary of volunteerism, might refuse to respond.

Approach: A simple, low key, direct mail solicitation was developed. With a minimum of pressure, every employee was given the opportunity to join the TVS. The solicitation letter included examples of potential areas that could use technical help.

Result: This low key solicitation, predicted to produce 40 volunteers from a 3000 employee population, actually received 181 positive responses the first week. The program tapped an apparent employee need.

6. User Reluctance.

Barrier: Municipalities know nothing substantive about NUSC. The announcement of a volunteer service might be a surprise and generate suspicion as to the purpose of the program.

Approach: A direct mail announcement was sent to municipalities in Connecticut and Rhode Island (each of which has a NUSC laboratory) and Massachusetts. Addresses were obtained through the state municipal leagues. The municipal leagues were also encouraged "to broker" technical problems to NUSC's TVS. A short description of the program was given for inclusion in their newsletters.

Result: Although (1) requests were received from towns too far from either of the NUSC laboratories to enable volunteers to respond and (2) requestors asked for too much help (designing a sewer system) or low skill levels (someone to answer telephones while a secretary is on vacation), continuous and regular personal interaction helped resolve such mixups. Once the program's limitations were understood by the requestors, TVS was able to function effectively. Completed projects were highly publicized in a volunteer newsletter (*Grey Underground*, appendix B), which received wide distribution. Also, this newsletter served to educate other communities as to what they might expect from the TVS and update volunteers on what their peers were doing. Worthwhile projects effectively performed are the best advertisment that can be circulated about TVS. Reluctant municipal participants follow suit when they realize the technical benefits they are losing.

7. Supply and Demand.

Barriers:

a. Volunteers, unless called upon to help, will lose interest in the program.

b. Communities who cannot get help within a reasonable time will not continue to use the service.

Approach: A skills bank, which keeps data on potential volunteers, attempts to utilize all of an individual's talents. The NUSC volunteer newsletter, *Grey Underground*, documents requests, provides data on current projects, new products, etc. Volunteers are asked to contribute information. Through this medium both the volunteers and communities are reminded that they are not forgotten.

Result: Volunteers feel involved even when they have no assignment. They understand the range of projects, gather information on innovations, call other volunteers to offer assistance, and expect that a project will soon come up that requires their skills.

8. Problem Definition.

Barrier: A nontechnical municipal employee cannot always define a technical problem to an engineer. If that employee meets the engineer too early in the request stage, he may drop the problem rather than appear uninformed.

Approaches:

a. The municipal employee's first contact for assistance is the volunteer coordinator, a nontechnical person with good communication skills, who then determines which scientific specialist should provide the assistance.

b. Next, the volunteer coordinator speaks directly to the technical volunteer. Together they determine whether the problem is correctly categorized, i.e., communications, computer applications, hardware, systems analysis, etc. If the volunteer is deemed to have the necessary knowledge, he or she is asked to make a further, more technical, assessment of the problem. At this point, the volunteer is cautioned that nontechnical people may misinterpret a problem's cause. Diplomacy is encouraged to get technical details without offending the requestor.

c. When the technical volunteer confers again with the volunteer coordinator, a decision is then jointly made whether the volunteer has the skill, time, and desire to carry out the project, and if the problem is within the guidelines of NUSC's TVS.

Result: Much of the intensity is discharged from the scientist-requestor interaction. The requestor, reassured at having made the problem understood by the volunteer coordinator, feels freer to expand on the nature of the problem to the technical volunteer.

9. Political Alignments

Barrier: Dealing with municipalities means dealing with politicians; however, the TVS must avoid any political alignment.

Approach: The volunteer coordinator must be selective in the commitments made to ensure that there are no political overtones; otherwise, NUSC's integrity might be compromised. The chief administrative officer is always made cognizant of any TVS effort being conducted in the community.

Result: The task of the volunteer coordinator is to develop projects that meet the needs of the communities and the desires of the volunteers without embroiling NUSC in a political controversy.

10. Updating

Barrier: It is difficult for one person to keep track of innovations in every technical field given the speed with which technology progresses. It is also difficult for one person to stay on top of developments in every community.

Approaches:

a. The volunteer coordinator must first possess broad general knowledge. It is equally essential that the coordinator develop a good working

relationship with a technical research librarian who, then, can research and forward to the coordinator information that would have TVS relevance.

b. The volunteer coordinator must remain active in the communities in order to stay abreast of new developments and municipal interests. Those who develop a good reputation as TVS brokers are constantly alert to innovative information, ideas, and people who might prove useful to the program in the future.

c. Volunteers are encouraged to send pertinent new and innovative ideas to the volunteer coordinator for publication in the newsletter and to pass on information about problems in their own communities. This gives volunteers a feeling of participation.

Result: The TVS maintains vitality through constant attention to change. It also benefits from inputs from a diversity of sources.

11. Recognition

Barrier: Currently there is no money assigned within the Federal laboratory system for the testimonial dinners, trophies, awards parties, or mini-grants currently used by the nation's corporations to thank volunteers for their contributions of personal time and effort.

Approach: Letters of appreciation from municipalities that have benefitted from TVS are directed to the Commanding Officer of NUSC who then adds his personal regards, sends a copy to the volunteer, has the letter published in the in-house newspaper (NUSCOPE), and directs a final copy to the employee's personnel jacket. Notice of volunteer projects is, of course, also published monthly in the *Grey Underground*.

Results:

a. The Commanding Officer becomes knowledgeable about volunteer projects.

b. The volunteer's work is recognized by every NUSC employee, not just by fellow volunteers. A permanent record exists documenting the employees community efforts for future supervisors.

c. Successful volunteer projects encourage new participants to volunteer.

12. Paperwork

Barrier: If record keeping becomes too complicated, the volunteer coordinator would be rendered ineffective by paperwork.

Approaches:

a. Volunteer survey forms are kept in a file for reference when a request comes in. Because the number of volunteers is under 400, it has not been considered cost effective nor efficient to put the information on a microcomputer.

b. Technical requests are handwritten and filled out by the volunteer. These forms create the record of the TVS transaction both for the Navy, which requires a biennial report, and for reference when the same problem comes up again.

Result: Without onerous amounts of paperwork, the volunteer coordinator's time is spent developing projects, meeting with local officials, and forwarding innovation information to the appropriate sources.

IMPLEMENTING TVS

The following is a sequential series of steps that could serve as a checklist for implementing TVS:

1. To familiarize NUSC employees with TVS, considerable use was made of the NUSCOPE, the in-house newspaper. Promotional articles, announcements, in-depth reports of completed projects, all were included to heighten awareness of the objectives of TVS.

2. A survey form was prepared and circulated to determine the interest of NUSC employees in contributing their time and knowledge to TVS. (See figures 1, 2, and 3.) This survey asked the employee for pertinent data: name, code, business location, phone number, and education. In addition, information about hobbies and interests was requested. This was found to be invaluable. Often people are as capable in a hobby or avocation as they are in areas of training or education. Experience has proved that this type of information increases the ability of the TVS coordinator to make a good match of the specialist to the task.

3. Upon return of the survey forms, a mailing list consisting of those interested in joining TVS was established. Next, computer-generated address labels were prepared. These labels were duplicated in sets of 12's for future mailing of TVS-related information.

4. The information supplied on the survey sheets was categorized. From this, it was possible to obtain several levels of information: education, special interests, hobbies, assignment desired, etc. This allows the TVS coordinator to determine which person would be capable of resolving a particular problem.

5. With a defined group of volunteers available, TVS was ready to fullfill its function--assist local governments in resolving problems. The TVS coordinator prepared a letter announcing the inception of TVS and mailed it to the chief adminstrative officers of every town in the three-state area of Connecticut, Rhode Island, and Massachusetts where NUSC employees resided. (See figures 4 and 5.) It stressed that volunteers were available who would provide technical assistance to their communities, but were in no way in competition with private enterprise and would work on their own time. It also suggested that the volunteers could, for example, provide advice on how to select two-way radios, how to prepare bid specifications, or how to solve acoustic problems. Next, formal liaisons were established with city leagues in the three states so that requests for assistance in resolving technically based problems could be channeled from them to the TVS coordinator at NUSC, and then to the NUSC volunteer for resolution of the problem.

6. The TVS coordinator studies a technical request sent by a local community. Next, the request is routed to a NUSC TVS volunteer for another, more in-depth, evaluation to determine whether it is within the scope of the onboard technical expertise. Then, a volunteer is requested to assist the community. (Should it be judged that qualified people are not available at NUSC, the coordinator may offer alternative approaches to the community.)

7. Once the volunteers accept the responsibility for assisting a community, a meeting between local officials and volunteers is scheduled to design a solution that is mutually agreeable. The volunteers can be allowed considerable freedom because their credentials are checked by a supervisor or someone familiar with their abilities before an assignment is made.

TECHNOLOGY TRANSFER SURVEY

NAME: ______________________ CODE: __________

DEPARTMENT: ______________ BUILDING: ________ PHONE: __________

TOWN OF RESIDENCE: ______________________

EDUCATION: ______________________

(Degrees): ______________________

OTHER TRAINING: ______________________

(i.e., Volunteer fireman, special equipment use). ______________________

HOBBIES: ______________________

SPECIAL INTEREST AREAS: ______________________

____

ORGANIZATIONS: ______________________

(Professional and civic) ______________________

WOULD YOU BE INTERESTED IN:

	YES	NO
1. 1-2 year Intergovernmental Personnel Act (IPA) Assignment (may involve change of residence).	___	___
2. 1-2 year IPA Assignment (local).	___	___
3. Part-time local assignment.	___	___
4. Would you volunteer your own time to		
a. Own town?	___	___
b. Neighboring town?	___	___
5. Would you like to have more information on the Technology Transfer Program?	___	___
6. Would you like to be included on the mailing list for Technology Transfer?	___	___

Figure 1. Technology Transfer Survey

0702:DJM:amb
3920
80702-62

2 June 1978

MEMORANDUM

From: Office of Special Programs Development, Code 0702
To: Distribution List
Subj: Survey pertaining to interests of NUSC employees.

The Technology Transfer (T^2) program at NUSC is expanding. Six technology agents are presently on IPA assignments in Vancouver, Wash., Kettering, Ohio, New York City, Providence, R.I., New Haven, CT, and E. Providence, R.I. Locally, Waterford, Groton, Old Lyme and other combined communities are being assisted by the knowledge of NUSC employees. Cancer research and problems of the blind and handicapped are being addressed through scientific expertise developed in regular mission oriented research.

The attached survey seeks to measure the potential interest of other NUSC employees in this career broadening experience.

General areas of technology transfer now being investigated by T^2 include:

Air and Water Pollution Control
Environmental Engineering
Communications and Information Theory
Computer Applications
Electric Power Production and Transmission
Energy Conservation
Inventory Control
Law Enforcement and Criminal Justice
Noise Abatement
Ocean Technology
Prosthetics and Mechanical Organs
Remote Sensing
Seismic Detection
Fire, Police, and Emergency Services
Management Practice and Information
Personnel Management
Manpower Studies
Research Program Administration
Fisheries and Aquaculture
Biomedical Engineering and Instrumentation
Acoustic Detection
Electrotechnology
Operations Research
Problem Solving for State and Local Governments

If you see an area where your knowledge might serve others, or even your own community, please indicate by returning the survey sheet. If you have a special interest not listed, please include.

Figure 2. Survey Pertaining to Interests of NUSC Employees

Much excitement has been generated by those already on assignment who receive personal satisfaction through application of their speciality to the public sector.

Survey sheets should be returned to Donna J. Mansfield, Code 0702, Bldg. 80T. Questions may be referred to her at X-2116.

J. E. Atkinson
Head, Office of Special
Programs Development

Figure 2. Survey Pertaining to Interests of NUSC Employees (Cont'd)

80702:JEA:amb TD 6719
3920
80702-137

28 July 1978

MEMORANDUM

From: J. E. Atkinson, Head, Office of Special Programs Development
To: Technology Transfer Survey Respondents

Thank you for responding to the recent Technology Transfer (T^2) survey. T^2 is pleased that so many people with diversified skills and interest have shown a willingness to serve the public sector.

The program we are developing is new. Like everything original, it takes time to coordinate all the facets but we want to keep you posted on our progress.

Your responses have enabled us to initiate a Technical Volunteer Service. This service provides a force of technically oriented personnel which will be matched to community needs as they are identified.

Information on your returned survey sheets will be compiled on a microcomputer by skill, home town and area of interest.

During the month of August, we plan two workshops for Connecticut and Rhode Island government officials. The first, on computer graphics, will be held at NUSC, New London. The second, on budget allocation systems, will take place at Mohegan Community College in Norwich, CT. The hope is that these workshops will be the first in a series, will expand to include a broader geographical range (for those of you who live in Massachusetts), and will initiate a technology link with colleges and universities.

As part of these workshops, officials will be asked to fill out a "needs list" highlighting areas where technical assistance is required.

When problems are identified, the T^2 staff can go to the computer and see who we might have on board to help. Our function, therefore, would be technical brokerage.

Depending on the size of the job, it will be explained to local government people that small tasks can be accomplished free of charge on the employee's volunteered own time. Larger projects will be charged on a prearranged rate and must be scheduled so as not to interfere with mission oriented work.

For those of you interested in the longer term Intergovernmental Personnel Act assignments, we now have five technology agents on field assignment; final interviews for another position are presently underway, and we are advertising for another. These positions are being developed steadily. Please read the NUSC Bulletin where notices for available openings are posted.

Be advised that we are acting upon your responses. Silence on our part means not that we have forgotten you but that we are busy developing the system to utilize your skills.

JAMES E. ATKINSON

Figure 3. Letter to Technology Transfer Survey Respondents

TD 6719

80702:DJM:amb
3920
80702-130

20 July 1978

To: Mayors, First Selectmen, Managers
From: Donna J. Mansfield
Office of Special Programs Development
Naval Underwater Systems Center
New London, CT 06320

NUSC is a research and development center. As such, it requires a technical work force of engineers, physicists, chemists, oceanographers, computer specialists, systems analysts, inventory control experts, and many other disciplines.

The Office of Special Programs Development, more familiarly known as Technology Transfer Office, is tasked with the mission of making available NUSC's expertise to state and local government.

Projects already completed or underway include assisting police departments with radio communications equipment, budget control system development, building acoustic studies, emergency dispatch system evaluation, computerized inventory control, and design of forms for employee time keeping.

Our program is expanding to include college and university personnel among available expertise. Our hope is to establish a reservior of technical experts, to be known as our Technical Volunteer Service, to which local officials can turn when faced with a problem. This service identifies employees in our Center according to expertise and interest.

Should you have a technical problem which falls into any of the areas on the attached list, please phone me to discuss the matter.

Many of our volunteers have agreed to donate their time. If your project requires considerable time and effort, however, it may be necessary to set a prearranged rate for the work.

If our files show no appropriate volunteer, we are willing to advertise in-house to our 3,000 Center employees. We would screen the volunteer but the final decision for assignment to your project would remain with you.

Should you wish to discuss the Technical Volunteer Service in more detail, please feel free to call me at 442-0771, X-2116.

Cordially,

DONNA J. MANSFIELD
Office of Special Programs
Development

Figure 4. Letter Mailed to Public Officials Announcing TVS

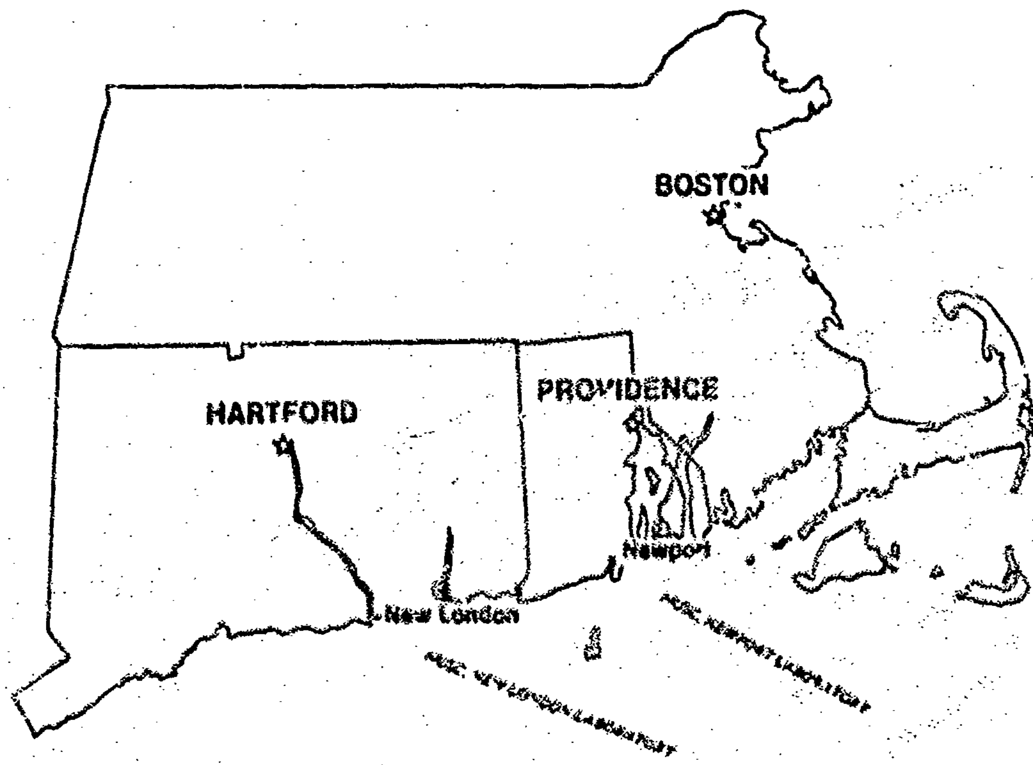


Figure 5. Tri-State Area Served by NUSC's TVS

8. A form was designed to record progress and document the solution. (See figure 6.) Documenting the solution is worth the effort; should the same type of problem arise, the solution is at hand. Also, the volunteer presents this detailed report to the coordinator when the project is completed. When this form arrives, it is a signal for the TVS coordinator to ask for an official thank you to the commanding officer in behalf of the volunteer's efforts.

Why does TVS work so well at NUSC? There could be several reasons: The commanding officer supports the effort; the communities dealt with are small, allowing a great deal of visibility; employees are community spirited; and new programs are not planned without establishing a need first.

In 1980, TVS was expanded to include retired NUSC employees. (See figure 7.) They would handle projects that, while appropriate to the volunteer effort and NUSC's area of expertise, were too time consuming for the employed volunteer. Many of these retired volunteers are ham radio operators. They remind each other of meetings via the air waves and have even contacted their peers in Florida to obtain information.

The method utilized by the TVS retirees in assisting their communities differs slightly from that employed by the regular volunteers: The retirees hold a meeting once a month, usually at a town hall chosen on a rotating basis. There the community officials and department heads can meet directly with the retirees, become familiar with their abilities, and discuss at length the problems that they would like to have resolved. Except for these differences, the routine employed in assigning a volunteer to assist a community is the same for both the retired and employed TVS member.

NUSC retirees have access to the NUSC library and equipment. A system has been initiated that requires only a phone call to announce the retirees' intention to visit NUSC to gather information or borrow equipment. (Security is alerted and notes where the retiree will be.) But also as important, the retirees have an opportunity to speak with other scientists who may have ideas on up-to-date solutions to specific technical problems.

A newsletter, the *Grey Underground* (see appendix B), is issued monthly and sent to all employed and retired TVS volunteers, municipal officials, and any others who request to be kept up to date on TVS. The function of the newsletter is multidimensional. It alerts the volunteers as to what is being done. It keeps municipal officials abreast of solutions that are being carried out for their towns. It also introduces technology and innovations that are occurring in other parts of the country, as well as around the world.

EXAMPLES OF TVS APPLICATION

Here are examples of how TVS helps:

1. An engineer responded to the request of an assistant city manager to evaluate whether a siren system under consideration would fulfill the city's requirements. The siren was found to be adequate.

2. A public wo[illegible]s director was considering the purchase of some expensive very high technology leak-location equipment (for buried pipes). He was unsure as to the performance of the equipment and whether his nontechnical staff could be

NUSC TECHNICAL REQUEST

INQUIRY DATE: ____________________

ASSIGNED ANALYST: ____________________ COMPUTER KEY WORDS: ____________

REQUESTOR: ____________________ TELEPHONE (   ) ____________

ADDRESS: ____________________

REQUEST RECEIVED VIA: PHONE ( ): MAIL ( ): PERSONAL VISIT ( )

SUBJECT: ____________________

DETAILED DESCRIPTION:

INQUIRY ACTION:

RESPONSE TO REQUESTOR:

DATE: ____________ METHOD: PHONE ( ): MAIL ( ): PERSONAL VISIT ( )

Figure 6. TVS Progress Monitoring Form

TECHNOLOGY TRANSFER
RETIREE SURVEY

NAME: ______________________ ADDRESS: ______________________

PHONE: ______________________

TOWN OF RESIDENCE: ______________________

EDUCATION: ______________________

(Degrees): ______________________

OTHER TRAINING: ______________________

(i.e., Volunteer Fireman, special equipment use): ______________________

HOBBIES: ______________________

SPECIAL INTEREST AREAS: ______________________

____

ORGANIZATIONS: ______________________

(Professional and civic): ______________________

WOULD YOU BE INTERESTED IN:

	Yes	NO
1. Volunteering your time to		
a. own town	___	___
b. own state	___	___
c. neighboring town	___	___
d. neighboring state	___	___
e. another part of the country	___	___
2. Will you need reimbursement?		
If yes,		
reimbursement for time	___	___
reimbursement for mileage	___	___
reimbursement for travel	___	___
reimbursement for lodging	___	___

Figure 7. TVS Retiree Survey

	YES	NO
3. Do you have a regularly scheduled vacation time?	___	___
If yes, please list dates you would not be available.		
________ ________ ________ ________		
4. Do you have any physical restrictions to the work you can perform?	___	___
If yes, list restrictions.		
______________________________		
______________________________		
______________________________		
5. Do you have your own transportation?	___	___

Figure 7. TVS Retiree Survey (Cont'd)

trained to use it. A retiree skilled in sound-measurement technology attended the vendor presentation, asked pertinent questions, and then was able to assure the director that the product performed as advertised. This retiree will also help train town employees in use of the equipment.

3. A town administrative aide was requested to draw up specifications for a new public address system to be used in the town meeting room. However, there were unsolved acoustic problems in that room for many years. He requested NUSC's recommendations for improving the acoustics so that any new equipment could function optimally. A NUSC volunteer versed in acoustics tested conditions and made recommendations to solve the problem. A technician then specified the kind of public address equipment required. The town official could now write his bid specifications.

4. The NUSC Energy Coordinator, recently returned from a 3-year assignment to the Rhode Island Governor's Energy Office, trained retirees at NUSC's New London and Newport laboratories how to do lighting audits as an energy conservation measure. The volunteers will audit municipal buildings in their home communities free of charge. (They may also choose to add to their income by doing lighting audits for corporations.)

5. A 24-year old cerebral palsy victim now has a talking computer thanks, in part, to the efforts of TVS. A local Rotary Club and a National Guard unit paid for the hardware and NUSC personnel donated programming and adaptive engineering skills to customize it for her disabilities.

These are but a few of the hundreds of projects TVS takes on in Connecticut, Rhode Island, and Massachusetts.

SUMMARY

In recapping almost 4 years of TVS operation at NUSC, there seem to be several reasons for its success:

1. The service was not announced until a sufficient diversity of technical specialities became available to handle a broad range of problems.
2. Program promotion focused on highlighting skilled people, not esoteric specialities that would cause community leaders to miss the point.
3. As soon as examples were available of how sophisticated expertise could be applied to local problems, those examples were documented. Thus, successful examples were used to generate other ideas and new applications by the very people who use them--the local community officials.
4. The volunteer was not touted as the total problem solver. Instead, he was considered as someone who could add a dimension of technical expertise that the town could not otherwise afford.
5. As are local governments, NUSC is a noncommercial consumer of products and services. The expertise of NUSC personnel in the evaluation of technical products and services for the laboratory's needs translates into volunteers' unbiased assessments of potential solutions to community problems.

6. The community has the final say regarding any recommendations made by the TVS volunteer.

7. The small-community focus of TVS serves as its best advertisement. Often a volunteer brings a problem to the attention of the TVS coordinator, rather than vice versa. Volunteers are aware that help is available and work to ensure that their home communities get every possible benefit from TVS.

In essence, the goal of TVS is to benefit the community by the sharing of skills, information, and equipment that taxpayers have already purchased for another purpose. It applies the abundance of scientific minds to the technically based problems of the local community.

A TVS at every Federal laboratory, each with its diversity of specialized training and resources, could help considerably in the solution of community problems nationwide. A good start has been made in this direction.

Here are just a few of the laboratories actively engaged in establishing their own TVS: Lawrence Livermore National Laboratory, Livermore, CA; the Naval Air Development Center, Warminster, PA; David Taylor Naval Ship R&D Center, Bethesda, MD; Harry Diamond Laboratory, Adelphi, MD; Los Alamos National Laboratory, Los Alamos, NM; the Army's Cold Regions Research and Engineering Laboratory, Hanover, NH; and the Army's Natick Laboratories, Natick, MA.

The resources are there and interest and need have been demonstrated in 4 years of operation of the TVS at NUSC. It is especially encouraging to see the transfer of the idea of TVS to other Federal R&D facilities.

Appendix A

NUSCOPE ARTICLES

Technology Transfer Announces Technical Volunteer Service

The response to the survey distributed recently by the Office of Special Programs Development, Code 0702, was excellent. Many employes indicated that they were willing to donate their time to solve the technical problems of area towns.

As a result, a Technical Volunteer Service is being established. Employes have been identified in terms of their areas of expertise, interest, and hometown, and a letter will be mailed to 169 Connecticut and 37 Rhode Island towns requesting that they outline current and future technical assistance requirements.

Town officials will be informed that small tasks could utilize volunteer time. Extensive projects would be charged on a prearranged rate basis and would be scheduled to avoid conflict with NUSC mission-related work.

The Technical Volunteer Service will provide a reservoir of technical expertise which can be tapped by government officials in the two state area should a problem requiring a specific type of aid arise. In addition, a link is being developed with colleges and universities to cover locales outside NUSC's range and specialties.

The Office of Special Programs Development, more familiarly known as Technology Transfer, will screen and match volunteers to town problems.

NUSC continues its role as lead laboratory in the Technology Transfer process, and has repeatedly been singled out for praise regarding the active manner in which it addresses local problems, but the T^2 program is only as good as the individuals who participate. NUSC is fortunate in having dedicated experts concerned about community improvement.

(continued on page 2)

NUSC — A Model for Volunteer Service

With budget cuts and increasing deficits becoming the order of the day at Federal, state and local government levels, volunteers may well become the "shock troops" of the future who can be called upon to provide a host of services that communities and organizations can no longer afford.

The Naval Underwater Systems Center has had a Technical Volunteer Service for several years that might well serve as a model for the type of volunteerism that will help slow the decline in services that threaten to develop. Since the mid-1970's the Center has provided a wide and varied number of services to various communities and groups on a volunteer basis through the Technical Volunteer Service.

The informal beginning can probably be traced to the work of Harrison Fortier, a NUSC employee who has since retired. He enlisted the aid of other staff members in assisting the town of Waterford, CT, with several problems in the radio communications area and computer usage. The services were provided on a not-to-interfere basis by employees who volunteered their time and

In 1978 Donna Mansfield was hired by NUSC and assigned to the Technology Transfer Office to seek ways to expand and institutionalize these types of services, if possible. Her background included many contacts and experience with volunteer groups, business and local government.

Early Attempts

Early attempts to find ways to extend NUSC expertise into the community centered on a number of workshops for municipal officials and their employees, but a decision was quickly made to attempt to recruit candidates from the Center's staff for a volunteer service that could be matched more specifically to the needs of the communities. The hope was that having a volunteer work on a problem in their own town or city would act as an extra incentive and give a greater sense of satisfaction.

The call for volunteers went out and NUSC employees responded with enthusiasm. That the service is a success is no longer in doubt. The Technical Volunteer Service at NUSC quickly reached a level of about 160. Then, in 1980, a decision was made to attempt to enlist NUSC retirees who took with them into retirement a variety of talents, and many of whom now had the time to devote to volunteer undertakings. As a result there are now about 60 retirees from both Newport and New London who are available to help with problems that range from the simple to the complex and time-consuming.

All told, the number of volunteers who have made themselves available to the Technical Volunteer Service now stands at about 350. The success of the program has resulted in many other government laboratories, through the Technical Transfer Program and the Federal Laboratory Consortium, requesting information about how the NUSC service works and how they can go about setting up a similar service.

Lawrence Livermore National Laboratory in California and the Naval Air Development Center are only two of those who have become actively engaged in establishing their own volunteer groups. In addition, the Naval Material Command has recently provided $30,000 to NUSC to help in spreading the word to other laboratories about how the system works.

Examples

What sort of assistance do the NUSC volunteers and retirees give? Examples are far too numerous to list in a limited space, but they range from the "quick and simple" to the complex and long-term. For instance, two volunteers have fixed a malfunctioning system in a local high school; acoustic problems have been solved for high schools, municipal buildings and the Coast Guard Academy; a personnel expert assisted a Connecticut community in developing an affirmative action program; assistance has been provided to police and fire departments in the area of technical oversight to evaluate bid responses from volunteer tutors math students at a public library one or two nights a week; and recently several volunteers assisted a rehabilitation workshop in revamping 40 drafting tables to form flat work benches for production line work; several sophisticated electronc devices to assist the handicapped have been developed, and one volunteer has received national recognition for his work on one such device.

(Cont'd on p. A-4)

Volunteers

The list goes on and on. It could — and does — fill many pages just with NUSC staff member volunteer activities only. The retirees, although their organization was formed more recently, have also compiled an impressive list of accomplishments. One developed a hypothetical Planning Department for a Rhode Island community, including the writing of position descriptions and the establishment of managerial priorities; another studied newly manufactured leak detection equipment to see how effective it could be in detecting underground leaks and will train municipal employees in its use; still another combed through the Federal Excess Equipment list looking for items his municipality might use.

In addition to providing direct assistance by the volunteers, the Technical Volunteer Service office collects a vast amount of information on various innovations and products that can be of assistance to someone attempting to solve a problem, and acts as a clearing house for the exchange of information. These ideas and products are not from the U.S. alone — a surprising amount of information is collected and passed along from cities and countries around the world that are working on their own problems. All of this information is available to volunteers, municipalities and organizations needing it.

As word of NUSC's Volunteer Service spreads because of their work, more and more requests are coming in from the state and national level for information on how the program is set up and how it is handled. The Administration on Aging of the Health and Human Services Department has shown interest in exploring the aspect of retirees volunteering their expertise, for instance.

As the need increases for the type of services and skills which NUSC staff members can provide, more volunteers will be required and welcome. Anyone interested in obtaining more information about the program or in signing up as a volunteer can contact Donna Mansfield in New London on X4603.

Harrison Fortier, a retired staff member from the New London Laboratory, is NUSC's "Volunteer of the Year". He is shown accepting a citation from Captain Alles in ceremonies held on April 22nd. Fortier is credited with being the inspiration for NUSC's Technical Volunteer Service which now numbers nearly 350 persons.

NUSC Volunteers Serve Their Community

The Technical Volunteer Service is perking away like the coffeepot on the back of Grandma's wood stove.

TVS provides a friendly, low key hook-up between Center employes who have developed specific skills through their jobs, community activities or hobbies, and the public sector people who need help.

The system usually works this way. A letter or phone call is received by the Technology Transfer staff, and reference is made to the file of over 150 employe volunteers to see whose background matches the request. A phone call is then placed to the employe asking that they contact the requestor to assess the problem in greater depth.

Many times this one phone call is all that is necessary. Because employes are familiar with the problem area they can quickly assess whether NUSC can help or not. If not, they make solid referrals to sources which can solve the specific problem.

The requests are as varied as the places from which they come. Of the initial 30 technical requests, the staff has heard from the Puget Sound area for navigational aids for their ferries; a Connecticut town needs help scheduling policemen to provide rank coverage on every shift; some one needs to know whether an automobile engine analyzer was available for under $5K. A request for review of engineering computations came from a Conservation Commission. What happens when you take parking meters out of a downtown area in order to compete with shopping centers?

As unconnected as these problems are to the primary mission of the Naval Underwater Systems Center, NUSC is able to find answers to all of those questions by using the Technical Volunteer Service.

An element of fun pervades this project. The requests are generally simple and the solutions apparent to those in the know. As one employe put it when thanked for his assistance, "Not at all, please call me again—it's more fun than working!"

If you're a volunteer and haven't been contacted, please be patient. We haven't lost you . . . the solution you hold hasn't been asked for, yet.

NUSC Helps Solve Acoustic Problem

Extensive modifications made by the City of New London to the former St. Bernard's School complex resulted in an alteration of acoustic conditions which severely limits use of the auditorium there. Because of his experience with room acoustics, Dr. Rudolph Croteau, Code 327, was asked to investigate the problem under a Technology Transfer project.

Dr. Croteau conducted acoustic tests throughout the auditorium and presently is considering several corrective suggestions for the most cost effective manner to return the auditorium to full use.

This is another example of how even a small investment of time by a knowledgeable technical person can have significant results in solving community and local government problems.

Other NUSC staff members who would like to assist their town or city with technical problems can get further information by phoning Donna Mansfield, Code 0702, Ext. 2116, at the New London Laboratory.

T² Lends Aid To Old Lyme Budget Process

The town of Old Lyme, Conn., thanks to the efforts of Jim Shutt, Code 071, will now be able to determine how much money it spent snowplowing its roads last year, or the exact cost of its summer tennis program.

Mr. Wallace Moore, First Selectman in Old Lyme, turned for help to the Technology Transfer Office at NUSC when he realized his need for a system that would track discrete budget items.

The new Budget Allocations Control System, developed with an eye toward future computerization, gives the town management a continuous overview of departmental budgets.

Mr. Moore, pleased with the results of his system, plans to implement it into his new fiscal budget this month. He made the Office of Special Programs Development aware of similar needs existing in other Connecticut small towns.

T² plans to conduct a workshop at NUSC New London for government officials from towns with populations under 10,000 and present the system for their consideration.

This project is another example of how a few hours work by a NUSC expert benefits the local community.

Linda Texceira explores new dimensions of her CORY system under the watchful eye of the system's designer, Les Cory.

Engineer Designs System to Aid the Handicapped

by Gary Steigerwald, 0223

The life of 24-year-old cerebral palsy victim Linda Texceira has been dramatically changed through the kindness of several Rhode Island groups and the dedicated efforts of a few men in particular.

Les Cory is an Associate Professor of Electrical Engineering at Southeastern Massachusetts University (SMU) who is currently working at the Naval Underwater Systems Center during a one-year sabbatical leave. While at NUSC, Cory is doing research on computer speech recognition for the Computer Operations Division, Information Services Department (Code 70).

He first heard about the Little Compton cerebral palsy victim from Gerry Elias, Code 71, division head. Elias, as President-Elect of the Tiverton-Little Compton Rotary Club, had been aware of Linda's condition, and he and his fellow Rotarians were trying to do something to enable her to communicate with others.

The severity of Linda's affliction has robbed her of control of her limbs and speech. When she was 14, her father developed a system whereby she "talked" by having her eye movements traced over a plexi-glass panel on which was inscribed the alphabet and numbers. This process was slow, to say the least. It also required patience and a great deal of concentration and skill on the part of the reader. But before the "eye board" was developed, Linda had no way to communicate except to nod her head in a yes/no fashion.

Knowing her problem and Les' work in speech recognition and speech synthesis, Gerry asked Les to visit Linda and evaluate her ability to use a commercially produced communications system that the

(Cont'd on p. A-8)

Club was willing to buy. When first introduced to Linda, Les was skeptical of her capability to handle anything more complicated than the eye board. After a few visits though, Les was amazed at what he perceived to be a high degree of motivation and intelligence. During "conversations" with Linda, he learned of her dreams to finish her schooling, to talk to friends and to work for continuing educational opportunities for people with disabilities beyond age 21.

An historical note is probably called for here. In Rhode Island it is law that the State provide for the education of disabled people only through high school or until they reach their 21st birthday. State aid for education for Linda stopped three years ago.

Linda's concern to provide for others as well as herself touched Les so much that he immediately set about designing a system which would be able to fulfill her dream list. His immediate interest was not to design an exotic system which would have to be fabricated and carry an expensive price tag. His idea was a system made up of off-the-shelf hardware which could be mixed and matched to expand its capabilities as a need arose and funds became available. To complement this hardware he would write or purchase programs to satisfy his requirements.

Les' first obstacle was obtaining the basic hardware. Within a few days he took his problem to the 281st Combat Communications Group, Rhode Island National Guard where he is commanding officer. Les' enthusiasm was picked up by the men and women of the Guard who responded with contributions sufficient to purchase a fully expanded Radio Shack TRS-80 home computer. The Rotarians, with funds already earmarked for Linda, were just as quick to purchase a line-printer, speech synthesizer, cables, and other equipment necessary to make the system work.

With basic hardware in place Les enlisted the assistance of Phil Viall, a 1981 SMU graduate now doing graduate work in computer science at Worcester Polytechnic Institute. Working 16 to 20 hour days, the two men were able to develop the necessary software in a remarkably short period of time. In under two weeks a crude (by the system's present standards) but efficient model was available for testing. Following 2 months of fine tuning, the promised system was complete.

All efforts could have ceased at this point, but they didn't. Linda's drive, enthusiasm and determination to master the system convinced Les that she was capable of handling an even more complex system.

The long and late hours of work Les was putting in at working on the system necessitated his having home access to the computer hardware. While his efforts were aimed at eventually increasing Linda's capabilities, his possession of the system prevented her from practicing and using the system. When a new or expanded capability was added, Les would pack up the system and drive out to Linda's house for a trial run. He would then return it to his house for modification of the program or additional programming. Each new section of the program or piece of hardware was tested by Linda before Les added additional capabilities. It was Les' intention to develop the system to Linda's full capability. The problem was developing, however, that the computer was spending more time at Les' house and less time with Linda.

It soon became obvious that a second "duplicate" system was needed for use by Les. Having a second system at his house would allow him to continue advanced development and give Linda the opportunity to use and develop her skills on the existing system.

In a chance of winning the top prize of a home computer, Les entered his most advanced system, unabashedly named the COmputerized Rapid Yield (COBY) word selector, at a regional fair of computer aids for the handicapped held in August at Boston's Museum of Science.

Although not selected by the judges as the winning entry, Les' system did generate a lot of interest from the media. In covering the computer fair, the Boston Globe featured Les' system over the prize-winning entries. The Fall River (MA) Herald News has run a feature about Les, Linda, and their system in its "Lifestyle" section, and Providence Television Channel 10 has also featured it on its news program. In November, Linda, Phil and Les captured most of the "Second Front Page" in the Providence Journal. On March 3rd, Linda, Les and Phil addressed a conference on

(Cont'd on p. A-9)

"Perspectives from the Physically Able and Disabled" in Providence. Most recently, inquiries have come from the Today Show and That's Incredible.

Failure to attain the duplicate computer has not dampened Les' spirit or drive. He has continued to develop and refine the CORY word selector so that it now goes beyond mere word selection.

A sample of the system's capabilities, all controlled by Linda using her head to tap a padded metal pole, include a vocabulary of over 1,700 words (all selected by Linda — she entered the last 400 herself); messages, rapid selection of letters, symbols, words, phrases, and messages; rapid screen-editing for composing messages up to 800 lines long; computer games and tutorials and even a calculator. Add-on equipment includes the line-printer for hard copies of messages and writing letters, and Rotary Club-purchased infinite speech synthesizer which allows Linda to "talk". Other optional devices will allow Linda to control lights and appliances, and even dial a telephone unassisted. These have been checked out, but not yet installed.

Les would like to have the time to work on the development of a device which would allow Linda to use her eye movements to control the computer. Such a device in use by a skilled operator should reduce reaction time to a fraction of what it now takes with the head bumping method.

"Love Linda"

The CORY system has been a rewarding experience for all involved. Martha Texceira, Linda's mother, will always remember the day that Linda used the voice synthesizer to deliver her first "Happy Birthday to Mom, Love, Linda". Linda is proud to show visitors a book report she is working on for a course being offered for special students by Salve Regina College. Les' reward is the friendship of a young woman whose life he has been able to positively influence and the letters she writes to him, regularly. Her first letter reads, in part, "Dear Les, You have made my life little more normal life because of people like you that help the disable people like me to communication with people without a handicap. God bless you, love Linda Texceira."

As a result of the favorable results and all the publicity Linda's system has generated, Les has received many inquiries from families and friends of individuals with severe disabilities. Inquiries have come from New Hampshire, New York, Kentucky and as far away as Texas and California. A second CORY system is scheduled for delivery to a youngster in New York this month.

After considerable thought Les and Phil have decided to establish a non-profit foundation for the purpose of distributing systems to individuals on an ability-to-pay basis.

It is estimated by Les that there are over 5,000 severely disabled persons in the United States whose lives could be significantly improved by the CORY system.

The Technical Volunteer Service, under the Office of Special Programs Development, is being approached regularly by outside organizations that seek high technology applications for medical problems, and NUSC volunteers have indicated an interest in bio-medical engineering. In order to accommodate both groups the Technical Volunteer Service would like to establish working groups of volunteers at both laboratories where these applications could be presented in round-table fashion and, if appropriate, broken down into small specialist tasks for volunteers.

To initiate this program, the Center has invited Linda Texceira to attend meetings at both the Newport and New London Laboratories. At the meetings Les Cory and Gerry Elias will discuss how Linda's problem was addressed from a technical viewpoint. Also to be discussed will be current cases where help is needed and expectations of requests from other areas.

The meetings are scheduled for:

Newport — May 10, 10:00 a.m.
Bldg. 990, Auditorium

New London — May 17
10:00 a.m., Bldg. 80
Cafeteria Conference Room

Interested volunteers are invited to attend with permission of their supervisor.

Newporters cited for assisting local disabled persons

Eleven NUSC staffers were recently lauded by Captain John W. Ailes, IV, Commanding Officer, for their efforts in support of a Technical Volunteer Program that has been conducted at the Center via notification from Les Cory, NUSC Computer Division, who has been spearheading the effort.

Gerald J. Elias, Head, Computer Operations Division, was credited for lending invaluable assistance in providing devices and services to local disabled people, and was responsible for virtually all of the work that was done by Mr. Cory for and with disabled people.

Gregory Jones, Electro-Acoustics Branch, was cited for designing and fabricating a digital switching system to enable a disabled person to control several devices by means of one simple switch. This system will provide a local quadriplegic with the ability to independently control a reading lamp, a tape recorder, a television receiver and a help summoning device.

"Bliss Symbols"

Stanley M. Rubinski, Sub-Systems Development Branch, was commended with the programming of a microcomputer to enable a disabled user to communicate non-verbally using a unique scheme of special characters called "Bliss Symbols". Bliss Symbols are used by disabled people who lack the ability to associate written words with their meanings.

Robert Szargowicz, Systems Design Section, was commended for designing an innovative phone cradle to enable a vocal quadriplegic to handle a multi-line telephone, a switch box to electrically isolate a user from a custom-designed, computerized system, and a special switch to enable a person with very limited strength and almost no coordination to operate a help summoning device.

Roger Hargrove, Systems Development and Computer Operations Branch, was involved with Mr. Cory in a number of projects to benefit local people who are disabled. It was noted his numerous contacts among technically skilled people on the Center, on and off, were invaluable. It was noted that a quadriplegic working at NUSC needed to be able to operate a particular switch on a computer terminal by means of a mouth stick. When no user suitable switch could be procured commercially, Mr. Hargrove arranged to have one fabricated on the Center.

George Panko II, Processing Systems Technology Branch, assisted with the needs of a young lady with cerebral palsy for educational software. Mr. Panko conducted a search of the literature and forwarded her references on dozens of useful programs.

Whistle Switch

Stephen S. Gilardi, Acoustic Warfare and Communication Systems Branch, recently devised a scheme for the modification of a commercially available whistle switch to make it into a device for use by a quadriplegic in controlling a television receiver.

John A. Sabulis, Scientific Applications Branch, constructed and expertly packaged a system to enable a young girl with cerebral palsy to dial and answer a standard telephone despite the fact that she cannot use her hands. She can now converse on the telephone via a computer-controlled synthesizer which she controls by pressing her head against a switch.

Thoms Riley, Head, Systems Design Section, was credited with designing and building an opto isolation circuit to enable a young boy in a New York hospital to control a computerized communications system that Mr. Cory had built. This boy, who has cerebral palsy and is unable to speak, now has an electronic voice.

Gladys D. Quick, Scientific Applications Branch, has been involved in a project to translate a very lengthy computer program from one computer language to another. Mrs. Quick has undertaken this project using her own personal computer to make the translation and test the results.

Adam Jilling, Non-Acoustic Effects Branch, designed and fabricated a sound-controlled switch which is being used as a rehabilitation tool by Mr. Cory in his work with disabled people who are unable to speak. The switch, in essence, converts otherwise meaningless sounds into control signals which enable a non-verbal person to communicate by means of a microcomputer. This device has been invaluable to Cory in his work with dysphonic individuals, particularly those who are either totally paralyzed or nearly so.

Appendix B

GREY UNDERGROUND, NEWSLETTER

Conn is attempting to meet the challenge of a more technological future directly. NUSC employees with their highly developed skills and experience can help them in the areas of Math, Physics, Computer Science, and Management. Pfizer is being solicited to help with the Science and Chemistry Departments.

4. Russ McDonough(NL) has been appointed to the Advisory Board of Project Concern. This group works to help the prison inmates reacclimate to society after completing their sentence.

5. Paul Sullivan (those of you who get the Norwich Bulletin saw his picture in the paper!), Mike Sullivan, Stan Rupinsky, Dave Williams, Jack Griffin and team leader Alex Theodoru (all NL) have finished converting 40 drafting tables into flat work benches for use in the production line at the Easter Seal's Sheltered Workshop in Norwich.

6. Bob Warenda (NL) is helping a female Cadet at the Coast Guard Academy with information on sonar detection devices and possible techniques to determine cracks in concrete structures.

7. Rudy Croteau (NL) is back in the room acoustics business. Rudy and Mike Ahrens (NL) are helping the town of Stonington select baffling for the room where town meetings are held. Rick Denomme has provided recommendations for the purchase of public address equipment that would be correctly sized for the room.

8. Sometime back, a town reported to me they would like to sell their microfilm equipment. If that town is still interested please contact me. I have another municipal purchaser.

9. Kay Crosby (R) has designed a logo for the Technical Volunteer Service that is now in Graphics being made camera ready. She is also designing a logo for the Corporate Volunteer Committee in Hartford. That group serves as a forum to link resources within the community and the state. The Cancer Society is on her waiting list for a logo.

10. Charlie Drenzewski, (NL) is also working with the Cancer Society to help them streamline their paperwork and systems. The agency suffers from years of executive turnover. They are no longer sure which functions are crucial to the operation and which are done simply from habit.

11. Joe Vargas (R) will work with the YWCA to help them schedule their rooms efficiently.

12. Tom Wheeler, (NL) will address the statewide meeting of Connecticut Town Clerks on the subject of Computers (June 8).

13. The New Haven Voluntary Action Center and the Danbury YMCA were referred to their town representatives for furniture and perhaps the use of a temporary building from the State Excess Property.

14. One of NUSC's own has a problem she is seeking help with. Alby Johnson has a house leak. the water comes in <u>over</u> the sill board. She has put on a

(Cont'd on p. B-4)

new roof, new siding, replanted the foundation plantings and had lots of professional "fix it" people in to solve the problem. After all this, the corner was still wet during the last rain storm. Her concern is potential foundation rot. This is an unusual request but if anyone has any ideas, Alby would appreciate the advice.

15. Tom Perella, (NPT) will help the New England Innovation Group select a word processing software package and to advise them how to incorporate their computer into the operational functioning.

16. Paul Miscisco (R) has been appointed a Westerly Federal Excess Equipment purchaser. Paul has agreed to be on the lookout for good items for other towns and non profit groups. If you need an item, please call Paul at (403) 596-5018 to get on his "wish list."

17. Roger Greenough (NL), John Fay (NL), and Don Farrington did an excellent job at the YWCA Sing-a-long. Many more singers are needed. Plans are being made for another session and to move the program outside during the summer.

18. The town of Stonington is considering the purchase of word processing equipment. They will talk to Carl Kindelien (NL) about how to assess their needs. If they decide to purchase, Roger Read will help them try out various kinds of hardware.

19. Jim Hazlin (NL) is making a cabinet for the speakers Fred Williams (NL) donated to a Colchester Nursing Home. This group effort means music for that home since Bernie Hemel already gave them the rest of a stereo system. Good coordination guys.

20. Ludwig Sorrentino (NL) has volunteered to rerun the solar hot water analysis that were mis-run in haste. The Energy Extension office, closed for lack of funds has the program. Can I get volunteers with TI programmable calculators to offer this service?

21. Connecticut is having a meeting April 20 to try to network stable resources for energy. Our volunteers may be called on to help in this effort.

22. Waterford had a leaking trailer roof. Les Greiner recommended a product to seal it.

23. The Federal Highway Administration has developed a computer traffic simulation program that can help state and city highway officials achieve savings in fuel consumption and design costs. Called NETSIM, more information can be provided by Richard Reilly, (202) 426-0660.

24. The Navy has designed a concrete sheath for underwater cables that follows the marine floor contour.

25. The Air Force Civil Engineering Center has done a study that tells the various percentages of waste fuel, oil, and lubricant that can be used to supplement heating plant fuel. More info anyone?

(Cont'd on p. B-5)

26. Electronic ballasts for flourescent lamps dim and brighten in reaction to ambient light. Forty percent savings are predicted.

27. Arnold M. Rosenberg, W.R. Grace Company, Columbia, Maryland, was given a national innovators award for a concrete additive that protects steel reinforcing rods for up to 50 years.

28. Don Malaguti will serve on an advisory committee for the Greater New Bedford Regional Vocational Technical School's purchase of computer equipment.

29. London has introduced sponsored trash cans. Businesses subscribe to the program for $130/ year and are allowed to advertise on their trash receptacle.

30. Space is at a premium in Japan's tightly packed cities where the average family home is about a third the size of its U.S. counterpart. What has kept the residential environment livable in these crowded conditions is employment of the same space for different functions at different times. It allows the same room to be used for eating, sleeping, study or entertainment with the accessories necessary for each function brought in and then removed and stored. An application of the "flexscape" concept to the public sector, one that saves scarce city resources and allows different population groups to use the same facility at different times is reported below from Kobe, a leader in civic innovation.

With Japan's population density one of the highest in the world and urban land consequently trading at inordinate cost, public authorities have found it extremely difficult to assemble adequate parcels for neighborhood parks and playgrounds. In deciding on the design of a new elementary school, Kobe city officials have developed a plan to ensure the most effective use of limited public space. Applying the "flexspace" principle, it provides for the multiple use of the same land and the same facilities by both students and the general publ[ic] at different times of the day.

More than a third of the parcel accumulated for the school was made into a public park the use of which is reserved to students during school hours. Similarly, the school grounds and facilities are not reserved exclusively for students but are designed for shared use with the public. This has been accomplished by separating administrative offices and classrooms from those facilities, such as the library, meeting rooms, and the gymnasium which are intended for public use after school hours. These facilities, placed in adjacent buildings, separate the classroom area from the planned community of shops and high-rise housing which abuts the school on both sides. The division of function is also observed in the design of the classroom complex where a playground separates the classroom buildings devoted to the lower and upper grades.

31. Germany has developed new dual chamber garbage containers that allow source separation into the truck.

32. Germany has also developed a floating desalination plant for sea coast villages who need to make drinking water from sea water.

(Cont'd on p. B-6)

33. An anemometer is needed by Jim Gallagher for a study at East Lyme High School. Is there one around the lab to be borrowed?

34. The New England Innovation Group through this office has requested a volunteer to help create alternate financing for non-profit agencies who need capital to carry out energy conservation measures. Through our new network, this request was directed to the Hartford insurance companies who have much more expertise in financial matters.

35. I am now beginning to work with municipal department heads to train them how to use volunteers. On April 16, I will do a seminar for South County officials. I would like the NUSC Technical Volunteers Retired to attend that meeting instead of having our regular meeting. I will let you know the place and time by separate letter. (Rhode Island only)

36. Businesses and business organizations are beginning to look to NUSC employees for innovative ideas that our personnel are developing on their own time. If you have such an idea that might be appropriate for a high technology industrial park, an innovative process for industry, or a good idea you might be willing to share, let this office know.

37. Adam Jilling (NPT) has designed a voice actuated switching system for use by a disabled person in controlling a basic communications device. The user is capable of making sounds but cannot speak. The unit is part of a system Les Cory (NPT) is designing to convert unintelligible sounds into synthesized speech.

The switching system was built by Larry Chace, then an employee of OTI. Les Cory says the device is extremely useful as a diagnostic tool in his work with people with severe disabilities.

38. A Connecticut woman has been discovered in an institution; thought to be retarded, Les says recent tests have proved she is intelligent but needs a means to communicate. Anyone interested in working on this project???

39. I will be making a presentation in April for a New England regional meeting of municipal officials to tell them of our successful volunteer program and how we work with municipal officials.

40. The City of Fall River is interested in determining whether a Central Personnel Department would be cost effective in their city. They will make an appointment to talk with Joe Murphy about how to do the study. They also hope some of the Fall River retirees could help with the project.

Thank you for the continuing help!

DONNA MANSFIELD
Community Liaison Coordinator
(203) 447-4603

The Grey Underground

Newsletter for the NUSC Technical Volunteer Network

Due to vacation schedules there will be no August retirees meeting.

1. Small Towns Institute, hearing about the work of volunteers in Westerly, R. I. wants to do a comprehensive article about the TVS at NUSC.

2. Janet Polinsky, State Representative, is interested in having Rudy Croteau take a look at acoustics at the State House. It seems House members have trouble being heard during speeches. Rudy has so ably solved problems of this nature in the past.

3. Bob Hayford will volunteer to help Niantic State Prison personnel figure out some computer routines that have been puzzling them.

4. A copy of Linda Texceira's eyeboard is being presented by her father to S.E. Connecticut Easter Seal Rehabilitation Center. The director of this unit will explore its potential as a production item for the sheltered workshop.

5. Jeffrey Vuono, (NL) coop student, will do an acoustical study of the performance center at Westerly Center for the Arts. He will work under the direction of Rick Denomme and Rudy Croteau.

6. If anyone knows enterpeneurs out there, it seems two products emerging from federal R & D have good potential for commercialization. One is the Sippy Diet out of Natick; this liquid diet tastes like steak or even spagetti and meatballs. It would be excellent for nursing homes, folks with broken jaws, or anyone who is ordered onto a liquid diet.

Cold Regions lab has a new paint that prevents ice adhesion. It can be used on antennas, submarine surfaces, etc. anywhere that a build-up of ice would be dangerous or reduce effectiveness.

Anyone interested in further information please call me.

(Cont'd on p. B-8)

7. Alex Theodoru, (NL) has completed phase one of his help to Westerly, R. I. They have ordered a computer. Mr.Miller indicated he was very pleased with the technical dimension Alex added to their study group.

8. Jim Davis, (NL) went with NEIG's Rick Regan to visit a Lawrence, MA food processing plant. Jim, NUSC's boiler expert, looked over the plant with an eye toward energy conservation.

9. George Panko, (NL) helped out the United Cerebral Palsy by building table fronts upon which Laura Bradley, a local artist, designed the CP logo. All work was in preparation for the organization's Annual Telethon.

10. Rick Walters is helping Tom Dembec, Waterford Civil Preparedness director outline his specifications for CP computer needs.

11. The National Technical Information Service has a new publication from National Bureau of Standards. It describes methods of suppressing electromagnetic interference affecting mobile radios. EM1 caused by a vehicle's own electrical system, can seriously degrade the performance of mobile radios. Copies of methods of Suppressing Automotive Interference (SP 480 - 44) are available for $6. prepaid from:

N T I S
Springfield, VA 22161 Reference PB#82-165259

12. The YWCA is seeking the following types of help:

Volunteer/Intern Descriptions

Group Leader - At Niantic Women's Prison, an individual to lead informal rap groups or specific activities (e.g., drama workshop) with small groups of prisoners for six to eight week sessions. No experience required.

Instructor - Finance Management - Someone to teach four to six week sessions in budgeting, financial management, smart money usage.

Public Relations - Someone to write press releases on programs, activities and topical pieces on women's or related issues. Also to do speaking engagements on YW programs.

Instructor - Physical Education - Either to teach six to eight week course, to assist Fitness Center Staff, or run satellite programs.

Group Leader/Counselor - To run rap group for teens (boys or girls or mixed), and possibly individual counselor.

Child Care Trainer/Worker - To teach Girl Scouts infant and child care and/or to staff drop-in day care center.

(Cont'd on p. B-9)

Facilities Planner - To explore and coordinate renovation of lower level institutional kitchen for use as snack bar and/or cooking classroom. Includes bringing area up to fire, health, handicap access codes.

Ceneral Carpenter - To build equipment (lockers & storage units) for day-care center. Also to install a chain link fence and play equipment.

Program Planner/Evaluator - To develop new programs for the YWCA; possibly including needs assessment of membership and community and to evaluate existing programs.

Promoter/Fund-Raiser - To coordinate publicity for Fitness Center and other programs, to run membership drive, and to staff fund-raising events.

Grant Writer - To research and develop foundations and other funding sources; to develop and write grant proposals for specific programs.

Plumber - To convert an existing bathroom to be handicap accessible.

Financial Planner/Adviser - To assist Board and Staff of Y in general budget planning; to critique fund raising methods and plan capital campaign.

Teen Program Coordinator - Person to work with area schools (Groton and New London)to develop a teen drop-in center at the Y, organize activities (dances, trips).

13. Rock Hill, S.C. is testing a new full scale fleet management system that operates on a desktop computer.

14. The City of Santa Maria, California has worked out an arrangement with Micro Time Sharing for placement of a "vending computer" in the library. The computer is available for use by the public at a cost of $1. for 20 minutes. In exchange for providing space, the city is allowed use of the Apple II Plus system during off-peak hours at no cost. Some accounting and purchasing functions are already up and running. Santa Maria receives 5% of the income from the use of the computer by the public. Further info - Jack Buchanan, Librarian, 805-925-0951.

15. Crime Shoppers Catalog, a compendium of law enforcement technologies available through the Federal Laboratory Consortium is available from the Southwest Innovation Group, 200S. Anaheim Blvd. Suite 220, Anaheim, CA 9280S for $9.

16. Tom Riley (NPT) has built a motion detector for disabled a woman injured seven years ago by a drunk driver. It is hoped that Tom's device will help her translate body movement into communication. At present she has no means of communication.

(Cont'd on p. B-10)

17. A new more energy efficient method of eliminating electroplate waste has been developed by LICON, a company backed by the U.S. Navy and DoE. The closed loop low pressure, low temperture system uses unique evaporator wastewater recycling methods. In this system, water, electroplating metals, and waste heat can all be reused. More information on this system can be provided by

Tectra Newsletter
School of Business and Public Admin.
Calif - State Univ.
Sacramento, CA 95819

Refer to newsletter (Vol 3. No 6.) dated June 8, 1982. Example A24-02.

18. Scott McCarthy, and Rother Hodges (NPT) were able to trouble shoot the malfunction of a German made cardio-pulmonary apparatus at the Univ. of Rhode Island.

19. The Apple Computer Company has a new program called Apple Bloss through which they donate Apple Computers to secondary schools. 1-800-538-9696 is the toll free number for more information.

20. An OTTO network technology agent has a client who has developed a process for the destructive distillation of used tires. The process yields carbon black and an oil similar to number 2 fuel oil The client would like to discover new uses and markets for carbon black.

21. Ohio State is drafting a proposal to do research on how to weld powdered metal parts

22. Soldiers Grove, WI has passed new regulations that will require all homes be at least 50% solar. They are also working on the solar attic concept there, more info on solar attics can be obtained by writing to:

Lands Directorate
Environment Canada
Ottawa, Ontario KIAOE7

23. Bob Kline, an expert in waste water treatment and hazardous mat ials at the Naval Air Engineering Center has been available for questions around sewage treatment problems.

24. Cold Regions laboratory is writing a manual, along with Canadi experts, on how to design and build waste water treatment plants. They also have state of the art expertise in advanced waste water treatment and district heating.

25. CRREL can also address problems of ice adhesion. They also ha a bubbler system that keeps waterways open. In addition, they have become skilled in the Finnish Method of storing logs in water throughout the winter (without the logs freezing in place) Cold Regions lab seems to have answers to any engineering problems having to do with cold.

(Con't'd on p. B-11)

26. Help! Home handymen!! The Easter Seal Rehab Center in Norwich needs an office constructed. (Sidewalls only, no heating or electrical work.) Mike Woodside has agreed to be crew boss. Can I please have four volunteers to help him? The job should be complet in a weekend and Easter Seals will supply materials.

27. The Blackstone Valley waste water commission is looking for some handholding while they decide among the several computer vendors who have made presentations. Located in E. Providence, the commission will reimburse a volunteer for gasoline.

28. Lawrence Livermore Laboratory has sent me a plan of devleopment that indicates their intent to have a Technical Volunteer Service operational by Jan 1, 1983.

That's it for this month. Remember if you come across new idea innovative products, different processes that might be used to help municipalities, small business, or non-profit sector, please let me know so I can include it in the newsletter

Donna

Donna J. Mansfield
Community Liaison Coordinator
Code 0702, Bldg. 80-T
(203) 447-4603

TD 6719

The Grey Underground

Newsletter for the NUSC Technical Volunteer Network

Retiree Meetings:

New London, Thurs., Sept. 9
2:00 pm, Cafeteria Conf. Rm.

Newport, Mon., Sept. 13
10:00 am, Conf. Rm 102D

1. Thames Science Center sponsors a monthly children's series entitled Science Saturday. The aim is to bring children and their families in contact with scientists. Themes for the coming year include: astronomy, archeology, the human body, inventions, computers, aquaculture, man's animals, and soils.

Art Moorcroft (NL) and Steve Cox, coop student, have already volunteered to do a Saturday demonstration of microcomputers. If anyone else is interested in doing a program on that or another subject, please call me for further info.

2. There is a good article in the June 1982 issue of INC. magazine on "Copier Wars". It talks about what is available in copying machines, how to decide which machine you need, etc. It would be good information for municipal purchasing agents.

3. Technology Review also has an article that might interest many municipalities who are interested in redevelopment or revitalization. The article is entitled "Small Space is Beautiful" and it tells what to consider in the successful design of small parks to attract people. The article is in the July 1982 issue.

4. The Kawasaki plant in Lincoln, Nebraska, operates under the Japanese policy of providing secure employment for its workers. That means no layoffs in times of economic recession. As an alternative, Kawasaki has gone into partnership with the City of Lincoln and is lending its workers to carry out special projects for the City. The company thus retains qualified workers, contributes to the local quality of life, and gains a partial tax deduction.

5. Harry Sussman (R) will be working with a new program at the Montville Correctional Center. Harry's gardening expertise will help inmates develop a system to preserve seeds from classic old favorite plants. Seed catalogs sometimes ignore these varieties in favor of new hybrid varieties.

6. The Naval Air Engineering Center has initiated an environmental control project on mosquitoes. They introduced the fish Gambusia affinis into Center waterways. This small fish is a prolific feeder on mosquito larvae. The successful introduction, initiated in 1977, has resulted in the significant reduction of pesticide use.

7. The Marshall Space Flight Center has developed a new pivot attachment for prefabricated beams. Good for roof trusses, bleachers, or other lightweight structures, the joint is flexible when the pivot is attached but becomes rigidized by attaching a threaded collar. Call for more information.

8. The Northern Regional Research Center of the Agricultural Research Service has developed a new biodegradeable plastic (made with corn starch) that should have an immense impact on the packaging industry. (Con't on p. B-13)

9. Natick Laboratories has developed a new high quality, shelf-stable, pre-cooked, hot tray pack for foods that could be used in the Meals on Wheels program. A hot water boiler and tank heats the food enroute to its destination.

10. A new form of dust protection to protect machine operators now exists. The device is an air canopy that does not interfere with vision, hearing, or talking, but keeps out harmful respiratory dust.

11. Dom Balducci (NL) is working with the Westerly Senior Citizens in order to study what kind of public address system would be suitable for the hearing impaired.

12. Mario Tristany, Planning Director for the City of Norwich, invites all you artists and craftspeople to participate in the City's Harbor Day on Sept. 11. There is no entry fee for displaying your works but he would like a phone call to reserve space. 887-6250

13. Rudy Croteau (NL) is working with David Ogle at the State Capitol to make recommendations on correcting the problems brought on by painting the acoustic tile.

14. Ken Leiper (ND) will work with Dick Lougee, East Lyme First Selectman, and Joe Care (R) to attempt to correct a vandalism problem at a town water tank.

15. Fred Ponte (NL) will work with Bill Block, Norwich Purchasing Agent, to try to set up a comprehensive system for non-bid items.

16. Bob O'Neill will work with the United Fund Committee that reviews agenicies funding requests/

17. Richard McLellan, Connecticut College called for help with a Children's Little Theatre group. Thelma Charles is interested in helping since she has experience in both set and program design .

18. Les Cory (N) is working with John Barath, a Norwich Cerebral Palsy victim, to make a talking computer. John graduated from St. Bernard's with honors, and has been accepted at UConn. His mother was concerned about his ability to prove his math competence to his instructor since he cannot speak or write. The new computer should solve those problems.

19. The City of Groton is concerned about odor problems at the treatment plant. They were referred to the Army's Cold Regions Lab specialist for recommendations on new chemicals that might help with the problem.

20. The Town of Groton is interested in having a Naval Air Engineering Center specialist look at a chlorination problem they are experiencing.

21. Joe Bablac (Npt) will be working with the Blackstone Valley Commission to help them sort out information on recent computer presentations made to them.

22. Steve Gilardi (NL) is working with Les Cory to develop electronic devices for the handicapped.

23. George Panko (NL) will research the existence of a computer CRT that works by touching the screen. Anyone having any leads on this equipment, please contact George at X5033, or X4536.

24. The City Manager of Newington, Ct. has called. The City recently finished a computer needs assessment for their departments and wants advice on the next steps they should take. John Barkley (NL) will investigate the problem.

Remember, if you know of technical problems that your community is experiencing, please make the Technology Transfer office aware of the details. Perhaps a reasonable, cost effective solution has been found in another community. Technical Volunteerism works because individuals take it upon themselves to look for solutions to local problems.

COMMUNITY LIAISON COORDINATOR

TD 6719

The Grey Undergroun

Newsletter for the NUSC Technical Volunteer Networ

October 1982

RETIREE MEETINGS

New London-October 20
10:00am-Norwich, (Check
with Planning Director
City Hall for Room #

Newport-Portsmouth
10:00 am, Oct. 18
Town Hall

1. The work done by the NUSC Technical Volunteers is gaining national attention in the handicapped world. This office has received requests from disabled persons in Ohio, Kansas, and Pennsylvania. Because of our national linkage to other laboratories through the Federal Laboratory Consortium, these persons were put in contact with other laboratories where they could obtain adaptive engineering technical assistance. Participating labs are the Naval Air Development Center, Wright-Patterson Air Force R & D Center, and Ames Laboratory. Good work all for setting the pace for others to follow. It is much appreciated by the receivers out there!!!!

2. Newington Children's Hospital has requested the opportunity for several of their rehabilitation staff to meet with Technical Volunteers to present a technological Wish List. Specific areas would be computers, eye control technology, adaptive engineering, electronics, etc. The date for a New London presentation has been set for October 19 at 0930 am in the Cafeteria Conference Rm. in Bldg. 80. A similar meeting is scheduled in Newport, the Conference Rm. in Bldg. 990 at 10:00 on October 28. Supervisory approval required.

3. Diane Davis (Npt.) having done an excellent job of capsulizing the education, experience, and volunteer interests of Newport retirees, is now doing the same thing for New London retirees. This kind of synopsis is valuable in educating municipal officials about the kind of expertise NUSC workers possess.

4. Roger Read (NL) says the math department at a Stonington junior high has a new TRS-80. They are interested in learning how other junior highs are incorporating microcomputers into the math curriculum. If any of you have junior high aged children who are using micro-computers in their mathematics program, please let Roger know so he can pass the information along.

5. General Dynamics-Electric Boat was interested in learning more about the CRREL developed paint that prevents ice adhesion. Local government thought it would be useful for fire hydrants and another caller wanted to explore the possibility of putting it on his airplane. Any other good ideas????

(Cont'd on p. B-15)

6. George Panko (NL) is investigating the software programs that a NASA/Wallops Computer Club is generating for the handicapped. Supposedly they are adapting game software so it can be used with a single switch. They are also writing educational programs that will be helpful to this population.

7. Harry Sussman (R/NL) has made recommendations on the tomato varieties to be planted in the Montville Correctional Center's new greenhouse. Gil Wagner, an environmental chemist with an interest in plants will be retiring from Pfizers soon and will join Harry in helping to plan a greenhouse-woodlot program at the jail.

8. Lawrence Livermore Laboratory Technology Transfer office called to trade information on work with the handicapped. It seems they are working with speech pathologists in California.

9. City of Norwich officials have been visiting the New London lab for informal ddscussions on computers, word processing, and facilities management. The City's department heads want to update themselves in these areas about new products, processes, applications, etc. This is part of a national demonstration project in which cities are paired with laboratories to determine the kind of benefits cities can receive from such a relationship.

10. A new company has introduced a product that makes big computers perform like small ones. The reason? Software packages are more affordable for microcomputers. In addition, this device eliminates the need for expensive floppy disc drives. Also, the micro can use a mini's high speed printer. "The Bridge" as this device is called, can be obtained through Virtual Microsystems, Inc. in Berkeley, Ca.

11. The Swedes are trying a new method of eliminating an acidic condition in a local lake. They dumped in all the eggshells from a local baking company in an attempt to neutralize the sulfuric acid. Results are still not in but Uppsala University feels it may work if the lake is not too highly acidic.

12. The French have developed a new moveable automatic toilet. Users deposit 20 cents in an electronic collection box. After use, the system is cleaned for 45 seconds by a high speed rotating brush and pressurized water. Next it is disinfected and then a perfumed deoderant is sprayed into the cabinet and the bowl is dried. This may be a solution for municipalities who must deal with a large influx of tourists every summer.

13. A Welsh company has developed a patented carpet of synthetic material to be used to create year round ski slopes. Boston Hills Ski area in N. Andover, Ma. will have the largest slope which will measure 1300 ft. long by 144 ft. wide.

(Con'd on p. B-16)

14. Israel has trademarked a new extinguisher system that provides effective fire protection for data processing systems and stored data. It uses a special gaseous agent that does not damage microfilm, magnetic tapes, etc. Within fractions of a second, the gas denies oxygen and snuffs out a fire.

15. The Canadian Mounties have developed a new method to stop vehicles in a high speed chase. The hollow spike strip is both 100% effective and falls within the required safety range for such devices. It consists of two rows of hollow spikes inserted in 4 ply woven rubber belting with a segmented metal back plating. The spikes are ground at a 15° angle and is Teflon coated to allow easy penetration of the tires. When a suspect vehicle passes over the spikes, they penetrate the front tires and break loose from the belt causing air to escape slowly from the tires. This method causes no steering problems but brings cars to a safe stop.

16. The Southern New England Telephone Company is developing an audio visual program for public use of the Nautilus. They are looking for examples of lore, legend, and trivia to make the project more interesting. If you served aboard the Nautilus, or know someone who did, and have interesting information to share:

Contact: Mr. Richard Newberg
SNET
200 Captain"s Walk
New London, Ct., 06320
Phone: 203 447-6405

17. The National Bureau of Standards is receiving a patent for a new method of removing sulfur dioxide from waste gases. The idea revolves around a reaction scheme whereby ozone (via an olefin such as propylene) and water vapor are introduced into a gas stream containing sulfuf dioxide. They act to form a variety of Criegee intermediates which combine almost immediately with the sulfur dioxide. The end products are sulfuric acid and nitric acid mists - both of which can be further refined to use in commercial fertilizer. There are certain unknowns about this process, but the researchers suggest this method offers advantages over the commonly used limestone slurry system.

18. Visicalc, or one of the other electronic spread sheets, are finding new uses due to innovative users. Some folks use it to gain better control over cash flow, to answer financial and budgetary "what if" questions, and others keep track of expense account reporting on the system. According to users, who have even developed a newsletter, the uses for this system are limited only by the imagination of the user.

(Cont'd on p. B-17)

19. Doug Peabody of Waterford, called to inquire whether the federal government had courses in 1) interpersonal communications, 2) time management, 3) intergovernmental communication. He was referred to John Harris who informed him that municipal officials were entitled to attend federally sponsored courses.

20. The new Westerly Senior Citizens Center received the stereo speakers donated by Fred Williams and refurbished by Jim Hazlin.

21. NASA has developed a coating that protects sensitive equipment from heat. An immediate civilian application would be to protect fuel lines during a boat fire. (at least during the first few minutes)

22. A Pavement Management Course has been developed by the University of Illinois. The course is based on a US Army Corps of Engineers Project. U of I held the 3-day course in August. Perhaps a New England university would like to transfer the idea here.

23. For all you towns with beaches to be maintained, Cocoa Beach, Fla. has a new beach cleaner. The new system that has an automatic hydraulic lift means that one man can position the device next to a 55 gallon trash barrel, dump the can, and sets the can back in place. One man now empties 200 trash cans.

24. Clearwater, Fla. has effected substantial savings by instituting continuous road maintenance. At the first sign of street cracking or raveling, the area is sprayed with emulsified asphalt with a followup application of crushed rock. This treatment lasts 2-3 times longer than plant mix.

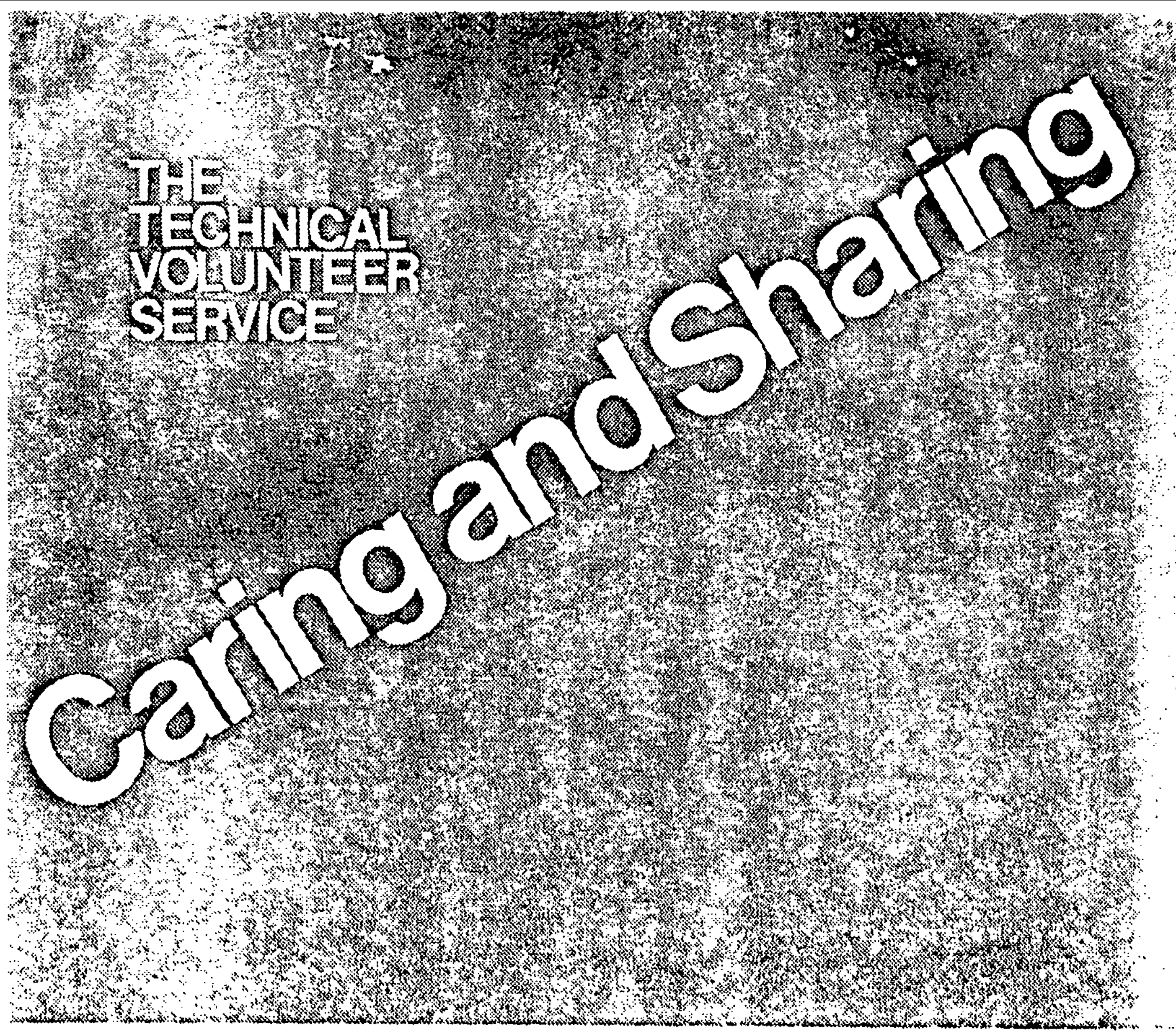
If you have questions, requests, etc., call me at (203) 447-4603

Donna

Donna J. Mansfield
Community Liaison Coordinator

APPENDIX G

LLNL TVS REPORT



The Federal Laboratory Consortium
for Technology Transfer

Report #LA-UR-83-2189

AN EMERGING NATIONAL RESOURCE WITHIN THE FEDERAL LABORATORY

The Technical Volunteer Service is an experimental project aimed at making the scientific and professional resources of the Federal Research Laboratories available to help Local Governments and other users through the involvement of Technical Volunteers.

Document Preparation by DelaBarre & Associates
1945 N. Fine Ave., Ste. #109, Fresno, CA 93727
Under LANL P.O. #9-X63-1973U-1

This document is the responsibility of the author and any opinions, findings, conclusions or recommendations expressed are those of the author and do not necessarily reflect the views of the US Department of Energy, the US Department of Defense (Army), the Lawrence Livermore National Laboratory, the Los Alamos National Laboratory or the Federal Laboratory Consortium.

PREFACE

The documentation presented in this volume is based primarily on a case study of the design, development and implementation of a Technical Volunteer Service (TVS) at the Lawrence Livermore National Laboratory (LLNL). The development effort for the LLNL-TVS program was performed by DelaBarre & Associates, Mr. Allan Sjoholm, Project Manager, under LLNL PSA #6677301 for the Office of Research and Technology Applications. Additional contributions to this development documentation were made by Mr. Mark Kaiser of the League of California Cities under LLNL PSA #1256105 to provide insight into working with local government. Experience gained from efforts at other Federal Laboratories, private sector firms, local governments and volunteer coordinating groups assisted greatly in the development activity.

The purpose of the documentation is to provide a comprehensive data package containing both proven instruments and techniques as well as the underlying rationale for the steps and actions that were taken.

This document is designed to serve as a practical guide for developing your own Technical Volunteer Service, however a degree of caution must be exercised. Each facility may have different policies and/or legal requirements that must be addressed specifically. Examples of these issues include personal and professional liability and workmans compensation insurance. Any ORTA entering into a TVS development program is advised to consult with your facility's General Council on these issues and the program in general. The rewards to the individual Federal research facility, the communities served and the employees both current and retired make the efforts required seem small indeed.

-- GET INVOLVED! --

ACKNOWLEDGEMENTS

Documentation of the Lawrence Livermore National Laboratory (LLNL) - Technical Volunteer Service (TVS) Development Program case history was made possible through funds provided by the Department of the Army - DARCOM. Additional program funds instrumental to the replication efforts within the FLC are being provided by the Department of the Navy and the Administration on Aging (AOA).

The LLNL-TVS Development Program was funded by the LLNL Office of Research and Technology Applications, Dr. G.T. Richards, Director. As in the case of any development effort, it is difficult to give proper credit to the many people instrumental in the project. We do however want to single out Ms. Donna Mansfield for her valuable assistance based upon experience gained through the Naval Underwater Systems Center TVS program and the joint AOA/FLC TVS program. To the many others who were personally involved or provided information during the development effort we owe the credit for the successful model developed at LLNL.

TABLE OF CONTENTS

APPENDIX CONTENTS

I. INTRODUCTION

1983 was proclaimed the Year of the Volunteer. From the highest level of our government, President Reagan has shown his own strong personal support by stating: "I just wish those who are pessimistic about the future of America could see an overview of this surge of creative and humanitarian action. We believe it should be recognized, encouraged and promoted. And that's why we established the President's Volunteer Action Awards, to focus public attention on the accomplishments of our nation's volunteers."

The concept of volunteerism and the establishment of formal volunteer programs within the private and public sectors is by no means new. Emphasis by the Reagan Administration, Public Law 96-480 (The Stevenson-Wydler Technology Innovation Act of 1980), and an ever expanding requirement for technical assistance in helping state and local governments meet the needs of our citizens do, however, provide a greater operational urgency for increased effort.

Public Law 96-480 requires that technology developed through Federal Research and Development efforts be transferred, where appropriate, to state and local governments and to the private sector.

Indeed in this era of budget austerity and high unemployment it behoves everyone to contribute, to the maximum extent possible, to the stimulation of our nation's economy and help it meet the threat of foreign competition. It is precisely in the area of complex and technical problems that Federal Laboratories, with their large and highly qualified pool of professional resources, can make unique and invaluable contributions. Municipalities are facing many more sophisticated demands - computer installations, radio and communications systems - with less money to hire technical staff. There appears to exist an urgent and very real need for scientific help beyond their own limited capabilities.

Federal Laboratory Consortium member laboratories such as The Naval Underwater Systems Center and the Lawrence Livermore National Laboratory (LLNL), along with several other public and private organizations, have accepted a leadership role in undertaking a new formal program to provide a Technical Volunteer Service (TVS) available to surrounding communities. The Administration on Aging (AOA) is particularly interested in the productive use of retired volunteers and is working with the FLC.

The LLNL-TVS program is being developed with two primary objectives in mind. The first is to increase the <u>technical resources</u> available to local governments for application on specific projects, task forces, committees or other support activities. The second is to experimentally demonstrate the power of technical volunteers in the solution of technical problems within the communities served. The LLNL-TVS uses both current and retired laboratory employees. The initial response to the call for volunteers was very encouraging (as of 4/29/83) with 272 current

employees and 37 retirees volunteering their services. Technical assistance assignments are currently being made as the requests for help from the users are being received. A solid foundation has been created on which future expansion can be based.

With this technical approach, LLNL has put in place a large and highly skilled pool of professionals qualified and motivated to render assistance first to local governments and schools and later perhaps to the non-profit and private sectors.

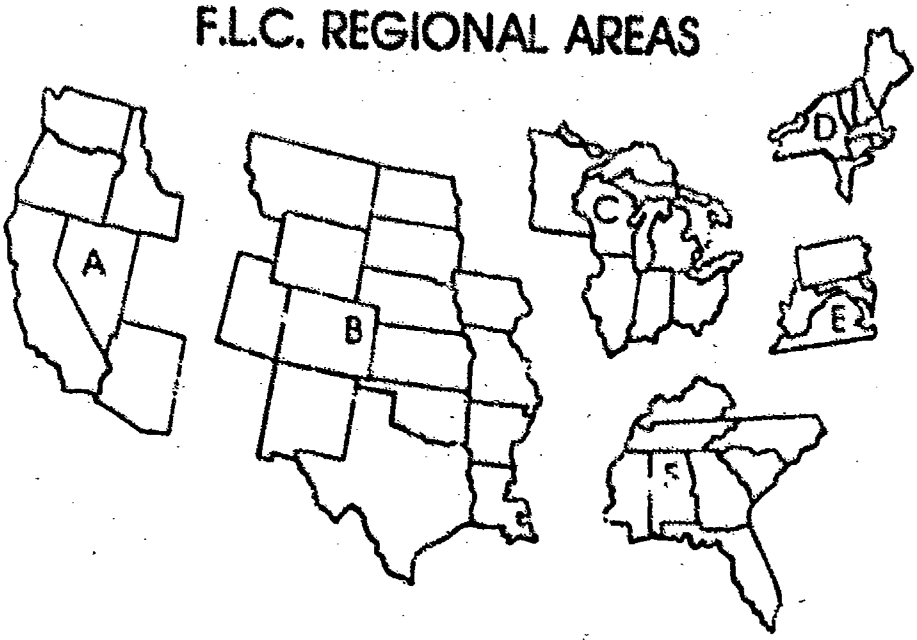
It is not the intent of the Technical Volunteer Service (TVS) to introduce competition with current staff, support consultants or other resource persons available to potential users of new technology. However, many specialized and additional services can become available to local governments and private industry through the use of volunteers.

II. TECHNOLOGY TRANSFER BACKGROUND

It is important that the Technical Volunteer Service Program (TVS) be viewed in the light of it's origin in the already established Federal Laboratory technology transfer program so that it may be placed in proper historical perspective.

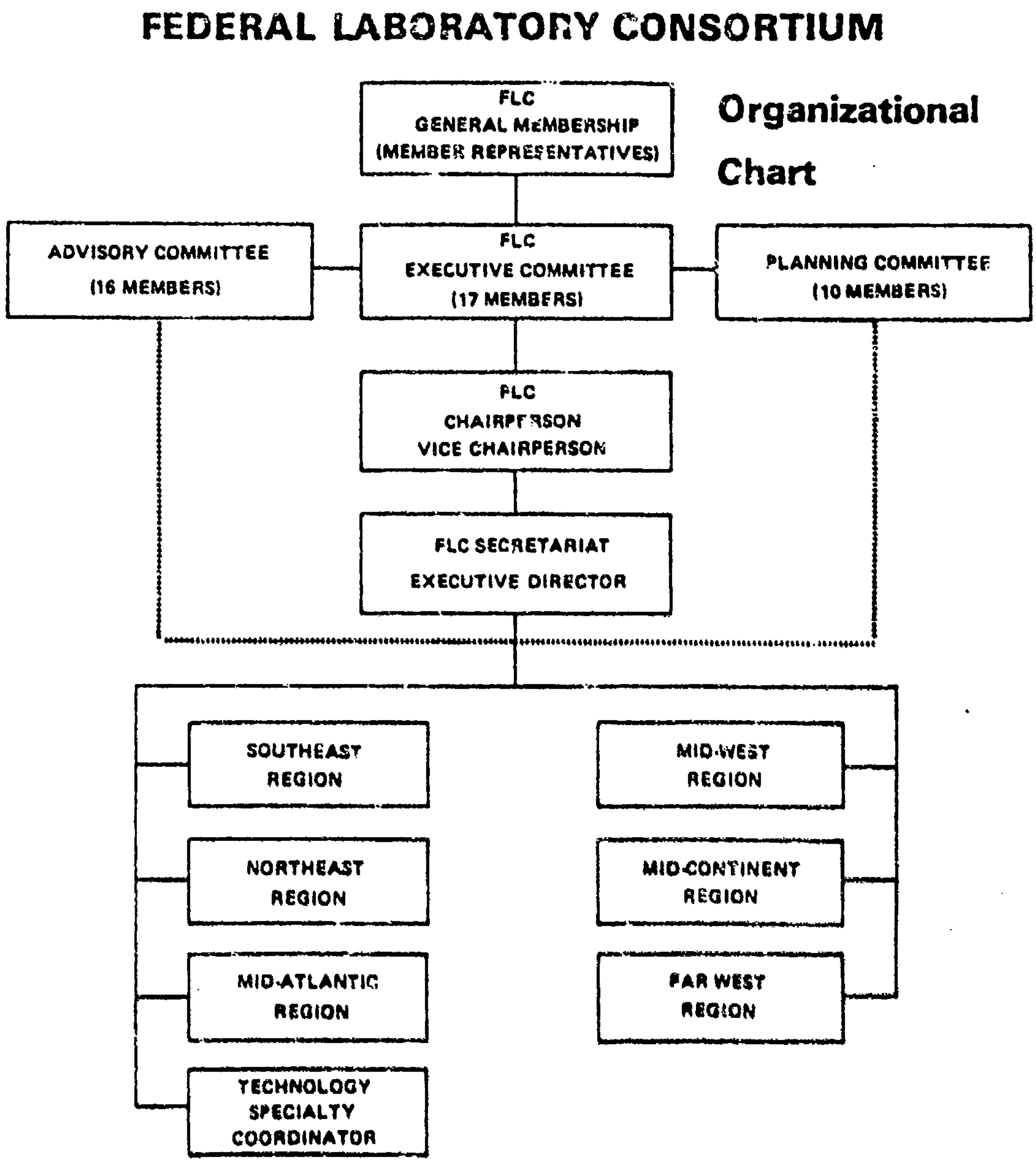
The Federal Laboratory Consortium for Technology Transfer (FLC) emerged from the Department of Defense Technology Transfer Laboratory Consortium formed in 1971 to improve inter-laboratory communications and find greater civilian uses for technical knowledge developed originally for military purposes. The original Consortium grew from 11 to 34 members by 1974 when all Federal Laboratories were invited to consolidate into one organization. The FLC grew to a current total of over 300 of the largest Federal Government Research and Development Laboratories and Centers. These member Laboratories and Centers represent eleven Federal Agencies including the Departments of Agriculture, Defense, Health and Human Services, Transportation, Energy, Interior, Justice and Commerce, as well as the Tennessee Valley Authority, the Environment Protection Agency, and the National Aeronautics and Space Administration. To ensure responsiveness to local area needs the Laboratories and Centers are grouped into six regional areas identified below.

F.L.C. REGIONAL AREAS



A. FAR WEST | D. NORTHEAST
B. MIDCONTINENT | E. MID-ATLANTIC
C. MIDWEST | F. SOUTHEAST

The organization of the FLC is depicted below.



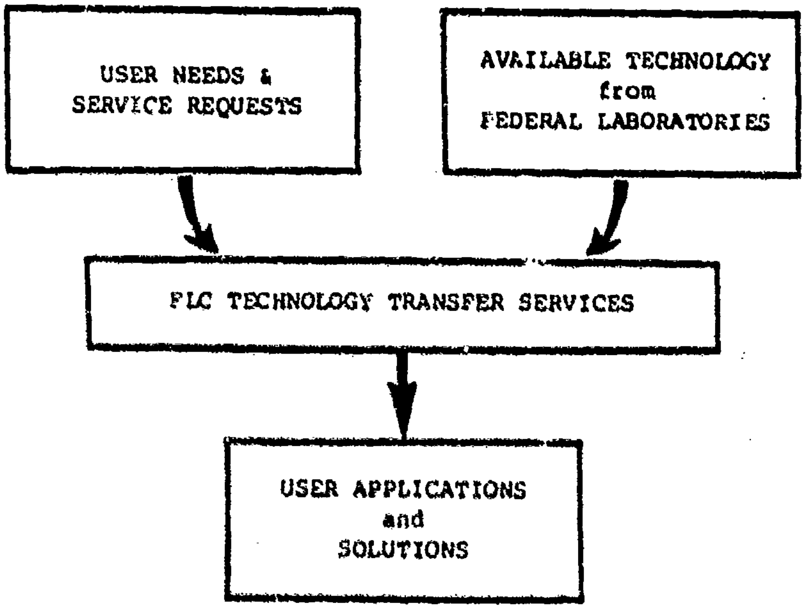
The transfer process of the FLC depends upon the active person to person participation of the users and individual member laboratory representatives. Simply stated, this process involves:

1. Documentation of R&D results by the laboratories and cataloging of these results by the FLC to identify available resources.

2. Identification and prioritization of needs and services requested by technology users.

3. Matching of needs and available resources.

The Transfer Process



The remainder of the process takes one of two paths: (1) a direct transfer where the technology is applicable in its current form, or (2) an applications transfer that involves the need for adaptive engineering or modification before the technology is applicable.

The entire process has proven to be effective through real world experience with a full spectrum of user groups.

The FLC represents a large and important national investment in scientific facilities, equipment, capabilities and experience through its' member Agencies and Laboratories. These Laboratories represent a powerful resource, that when properly mobilized can assist in the solutions to

many of our national problems. The FLC's national network helps users find information that is timely and directly applicable to specific problems. Each Laboratory has a Technology Transfer Coordinator who maintains contact with scientists and researchers within his own facility as well as his counterparts in other Laboratories and Agencies. Each Coordinator identifies new technologies of potential benefit to the public and private sectors and disseminates information regarding that technology.

The well documented roster of successful transfers of new technology developed in the FLC member Laboratories and Centers is convincing testimony to the value to this approach. The Technical Volunteer Service Program has been coupled to the proven and successful foundation of the FLC technology transfer effort. It represents a deliberate extension and enlargement of the basic concept through the utilization of both current and retired employees.

III THE DEVELOPMENT OF THE LLNL-TVS

Introduction and Overview

The overall thrust of the TVS Development Program is to activate a pool of volunteer technical talent from the very sizeable and so far relatively untapped reservoir of professional and technically skilled Federal Laboratory employees. This pool of talent has great potential for helping deal with the problems faced by local governments and other community organizations. Collectively the Federal Laboratories employ approximately 200,000 professionals whose expertise spans virtually every facet of science and engineering know-how. Technical retirees further serve to substantially increase the amount of professional help available to potential users. Currently there are no systematic procedures that permit ready accessing to this huge supplementary capability.

Lawrence Livermore National Laboratory (LLNL) has approximately 7200 current employees encompassing a wide range of professional and technical disciplines. There are over 1000 LLNL retirees residing in the Bay Area with the largest single concentration in the City of Livermore itself. These figures clearly show the very sizeable resource base of highly skilled people from which technical volunteers can be drawn.

For over a decade, LLNL has shared its technology with other Federal Departments and Agencies as well as with state and local governments in a strong and continuing technology transfer effort. As a major step in implementing Public Law 96-480, LLNL decided to organize a Laboratory sponsored Technical Volunteer Service (TVS) Program for both current and retired employees. It was intended that the TVS be an integral part of

the Laboratory's overall mission to provide technical assistance and support to state and local governments, non-profit organizations and small businesses. It is viewed as an opportunity for employees to make a statement, through action, that LLNL is genuinely concerned about all aspects of community and National welfare.

The TVS provides an avenue for current and retired employees to become actively involved in community technical assistance projects. Through this program employees are able to contribute directly to the solution of urgent technical problems affecting our community at a time when other resources are drying up. Employee participation can be in the form of direct technical assistance; a source of information, or an opportunity to act as a technical advisor.

The TVS Program can act as a resource referral system utilizing a Job Skills Bank to identify available volunteers best matched to assist the requesting user agency or organization. Noting the different environments between the Laboratory and the requesting user, special attention was given to understanding the potential user's needs and mode of operation. In addition the TVS must prepare both the volunteer and the local government officials for a "meeting of minds". The League of California Cities provided assistance in developing approaches for working with the operational level of local government and for informing City Managers and Department Heads how best to use this new breed of technical helpers.

The development plan for the LLNL-TVS was divided into three phases:

1) Phase A
   * Gather Data (existing volunteer programs);
   * System Concept Design (specific to Federal Laboratories);
   * Develop TVS Process, procedures and necessary forms, etc.

2) Phase B
   * Proof-Test questionnaires, letters, etc. and modify as needed;
   * Establish TVS Program Office;
   * Implement internal process;
   * Initiate contacts with local governements and community organizations.

3) Phase C
   * Operational Testing;
   * Development Documentation;
   * Replication at other Federal Laboratories.

Phase A: Design and Development

To establish an initial information base for program development, materials from all known related efforts were obtained and reviewed. This material included the National Center for Involvement Skills Bank Publication containing details on 10 volunteer sites and documentation on the

San Diego Senior Skills Bank Project. These and other documents provided a comprehensive overview of the features and characteristics of a wide range of volunteer efforts including examples of forms and procedures used. In addition to this literature review, a personal visit was made to one of the actual demonstration sites located at Monterey, Ca. to observe first hand the operation of the Volunteer Office.

The information base also included the case history of the Technical Volunteer Service operated by the Naval Underwater Systems Center (NUSC). It has been in existence since 1978 and now numbers close to 400 volunteers both active and retired. The NUSC volunteers' skills are, of course, closely aligned with NUSC's mission of submarine communications and weaponry. Employee experience in sonar, acoustics, communications, computers and engineering has been translated into local volunteer projects with Police Departments and their two-way radio systems, a hydrophone based leak location device for Public Works Department, guidance for municipalities as they select a computer system and pre-feasibility estimates of potential hydropower for local electrical generation. To become fully familiar with their approach and to gain as much as possible from their valuable experience, a representative of the LLNL-TVS Program visited the NUSC in Groton, Conn. and spent three days reviewing all aspects of the effort and discussing operational considerations with key project personnel as well as with user officials. In turn the NUSC Project Coordinator visited LLNL thus providing further direct interchange of information.

In addition to the above, general literature searches were conducted to locate other pertinent data and information; contact was made with professional volunteer societies; and discussions were held with various volunteer agency representatives.

A detailed Project Plan was prepared for the LLNL-TVS developmental phase. Its purpose was to establish a development work program, identify target completion dates, and permit assessment of required resources. This plan was reviewed and up-dated as the effort proceeded towards established goals and objectives. Preliminary forms and draft letters were developed for review. Skills Bank procedures were designed. Review mechanisms were proposed to evaluate performance from both the user and volunteer view point. Recognition and award features were identified as required features of the operational TVS Program.

Top level laboratory management support is absolutely vital to the development and operational success of the TVS Program. Every effort was made to ensure that key laboratory personnel were involved in the critical early planning stages. Approval of the concept and program direction was obtained and commitment of resources secured before launching the effort. At this point an annoucement of the planned program was made and a modest LLNL internal public relations effort was initiated.

As in any organizations of this size a number of existing volunteer and outreach type activities were already in existance. Indeed the Laboratory was noted for its' community concern and involvement. The LLNL-TVS Program was specifically designed to provide a new technical dimension to this community involvement. The TVS development was closely coordinated with these existing LLNL activities to avoid duplication and to allow maximum utilization of available volunteer resources.

Of particular importance was the LLNL Retirees Association and its active role in representing the Laboratory retirees. Early contacts were made to inform them about the proposed TVS Program to gain their support and participation.

A conceptual model of the proposed LLNL-TVS Program operation served as an overall framework in the development of procedures and for the prototype evaluation. The model identified the functional elements of the TVS process:

1) Identification and definition of user needs;
2) Identification of Volunteer pool and cataloging of technical skills;
3) Matching of needs with appropriate volunteer(s);
4) Implement and monitor support to user; and
5) Follow-up and Feed-back.

To further describe the model and operating process the following descriptive and procedural information is presented. The information is organized primarily around the volunteer; the client; and special system features.

THE VOLUNTEER

1. Recruiting of Volunteers

Various techniques were used for inviting the involvement of Laboratory professional and technical employees both current and retired. These techniques included:

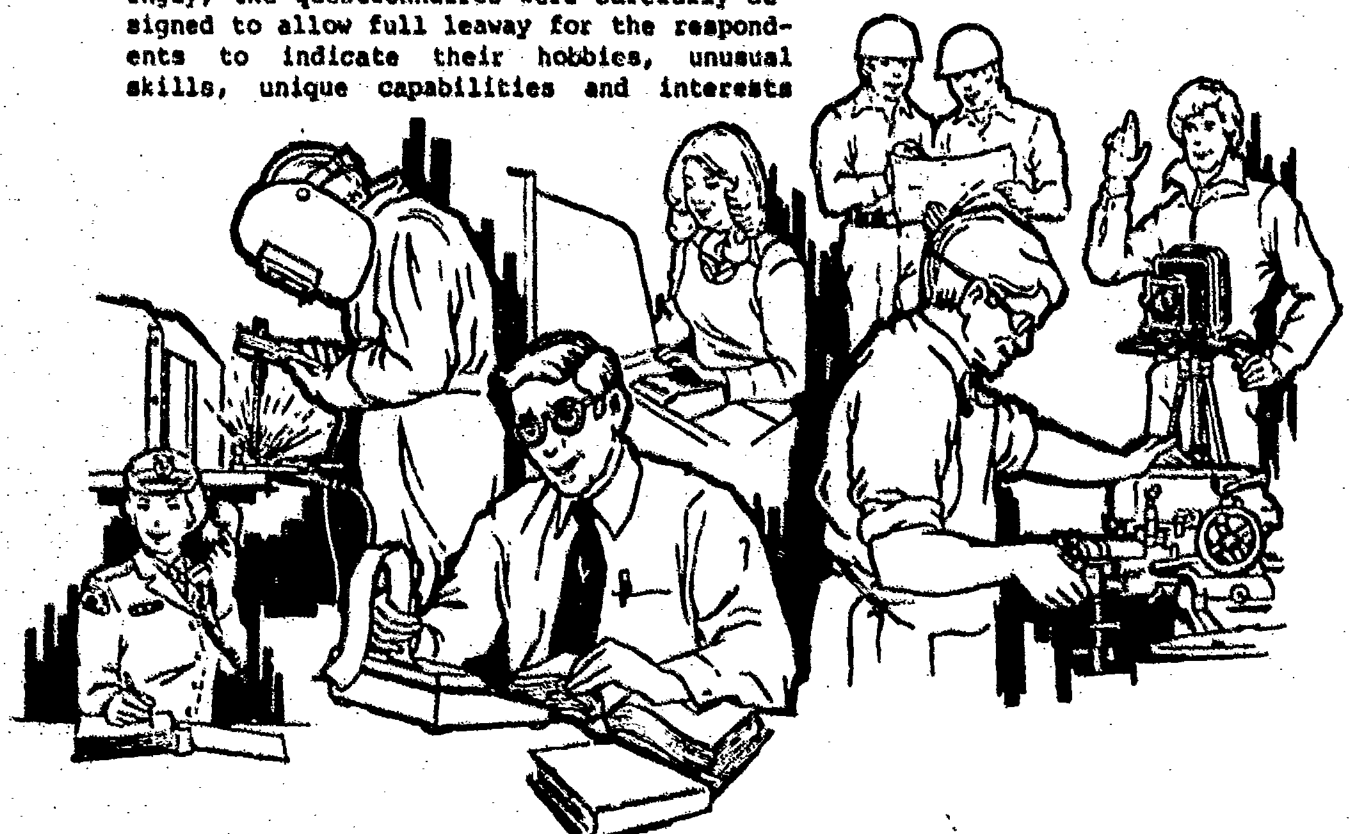
(a) Developing and distributing program information and personal questionnaires to all potential volunteers;
(b) Making presentations and briefings;
(c) Writing news bulletins and notices and publishing them in the Laboratory in-house news organ;
(d) Personal contacts with potential candidates;
(e) Contacts with existing employee organizations, (e.g. LLNL Retirees Association);
(f) Use of "Want Ads" to recruit special skills for a particular assignment; and
(g) "Word-of-mouth" recommendations from participating volunteers.

2. Application to Become a Volunteer

The application/personal questionnaire form provides the necessary documentation of a potential volunteer's capabilities and the means to determine the assignments most suitable to the individuals interests and qualifications. The major elements that are included are:

(1) Volunteer Identification Characteristics
(2) Occupation
(3) Experience
(4) Education
(5) Availability
(6) Special Hobbies
(7) Type of Assignment Preferred
(8) Other Current Volunteer Activities

Both current and retiree questionnaires were carefully pre-tested on sample populations to evaluate them given local conditions and to "fine-tune" them to gain favorable reaction while at the same time obtaining the desired information. The questionnaires were kept as short as possible, including only essential information. The basic identifying information about name, phone number, location, degrees, and current job (active employees) were naturally asked for. The very essense of a volunteer program however is personal involvement and commitment. Accordingly, the questionnaires were carefully designed to allow full leaway for the respondents to indicate their hobbies, unusual skills, unique capabilities and interests



that they cared to share. Questions were also posed to identify areas or groups that they cared to serve in or with. For purposes of cross reference of information, a question was put in to find out what current LLNL and area volunteer efforts the replying individual was already involved in. A question was included to find out if the volunteer was a member of a local government governing body or was serving on an appointed committee or board. Special note should be made of the "free form" nature of the questionnaire. Questions were posed in a manner that did not restrict responses allowing the applicant to provide a statement of all skills which he/she felt were important.

The summation of all volunteer applicant inputs represents the data base used for the establishment and updating of the TVS-Skills Bank.

Because of legal and specific LLNL requirements it was also necessary to ensure that the questionnnaire form contains a "Privacy Act Notification Statement" such as the following to assure the volunteer that information provided would be appropriately safeguarded.

> The State of California Information Practices Act of 1977 (effective July 1, 1978) requires the University to provide the following information to individuals who are asked to supply information:
>
> The purpose for requesting the information on this form is to collect information to use in building a skills bank to support the Laboratory's Technical Volunteer Service. Laboratory and University policy and State and Federal statutes authorize the maintenance of this information.
>
> Furnishing the information on this form is voluntary.
>
> Individuals have the right to review their own records in accordance with Laboratory Policies. Information on these policies can be obtained from the Personnel Department.
>
> The official responsible for maintaining the information contained on this form is: the manager, Office of Research & Technology Applications.

3. Volunteer Skills Bank

The information developed from the application/personal questionnaire forms is used for the preliminary selection of candidates for any placement. To facilitate this selection process a skills bank is used which allows for an organized review of each potential volunteer's capabilities and interests. The information and basic form were organized in a fashion that allows for easy computer application. Although limited resources precluded initial computerization of the data for the LLNL-TVS,

an interim system was developed using the WANG Word Processor. Through the use of key words and simple word processor search techniques, the system is working well for the limited volume of requests currently being processed. When warranted, the LLNL-TVS will convert the skills bank to a computer data base system.

4. Volunteer Assignment Procedures

Using the skills bank information individual TVS volunteer qualifications are reviewed against the nature of the problem or requirement stated on the User Request Form submitted by the local government or other client. Although every attempt is made to obtain sufficient information on the original request form some situations will require that the volunteer discuss the problem or need personally with the client to ensure a common understanding. After a careful review of the requirement and the surrounding conditions such as budget, politics, funds and time estimates, the volunteer and client mutually agree upon the next steps and the assignment begins. The User Request Form, later described in more detail, permits following the progress made and recording of results.

5. Evaluation by Volunteers

It is essential that the Laboratory, especially ORTA management, stay abreast of the progress and operation of the TVS. The program will both internally (employees) and externally (user groups) be quite visable. To assure that the Laboratory achieves the positive results the program is capable of achieving, input from both the individual volunteers and user/clients is needed. User/client input is covered later under Evaluation by Client. The volunteers assessment of his/her assignment is requested upon completion of the assignment. The main elements contained on the form submitted by the volunteer are:

(1) Satisfaction with Assignment
(2) Length of Assignment
(3) Amount of Time Spent
(4) Main Functions or Activities
(5) Communications Problems
(6) Value of Contributions Made
(7) Value to Volunteer
(8) Availability for Future Assignments

6. Recognition of Volunteers

While precise features have not been finalized, such measures as the following are under consideration:

(1) Letters of Commendation
(2) Feature Articles in Laboratory Newspaper
(3) Award Dinners
(4) Plaques
(5) TVS Participation Certificates

Recognition of Volunteers is a must to assure them that the work they are doing is both needed and appreciated. Each laboratory should develop a recognition program that is designed specifically for their laboratory and community environment. Special consideration should be given to going beyond the laboratory to the FLC or other national level.

THE USER/CLIENT

1. Establishing Contact and Community Linkage

Through the existing FLC technology transfer program, contacts with Local Government officials has in most areas already been made and channels of communications established. In the case of LLNL, the ORTA and the Laboratory Community Relations Representative had worked with local communities. Key organizations and networks such as the Southwest Innovation Group (SIG) and the League of California Cities (LCC) are available to capitalize on their established capabilities and reputations. In addition, personal visits were made to selected surrounding local jurisdictions to make them aware of the TVS. Initial contacts such as this or a letter to the Major or City Manager serves to alert local government of the establishment of this new service and to prepare them for future visits and discussions. The final step in establishing a working linkage usually includes personal visits with Mayors, City Managers and Department Heads from each local government to be served. These visits are used to explain the details of the program and to indicate the types of technical resources that could be made available to help them. The TVS Project Coordinator is envisioned as a key contact point and direct channel for receiving requests from potential users of the TVS.

2. User Requests

A short, concise and simple User Request Form was designed for use by potential clients. The form was based on the NUSC experience. It is anticipated that initial contacts may be made by phone and the form is usable as a phone interview guide as well as in a personal interview. It is essential that the amount of detail obtained concerning the problem or request be sufficient and meaningful enough to permit evaluation of the

type of technical resources needed for response. The information should be straight forward and tell the volunteer what the problem is. The form also has been developed to permit the TVS Project Coordinator to follow the progress of the assignment. The main elements contained in the form are:

(1) Identifying Data (Address, city, phone, etc.)
(2) Date received
(3) How received (Phone, letter, visit)
(4) Subject area
(5) Detailed description of problem/requirement (Time, budget, political and financial constraints)
(6) Inquiry action (Volunteer assigned)
(7) Response to requestor/action taken
(8) How results were given to user (Report, phone, letters)

3. Selection of Volunteer for Assignment

Once the request is formally accepted by the TVS the Skills Bank file is used to locate the most appropriate volunteer(s). Prospective volunteers would then be queried to determine their availability for service. A preliminary discussion with the available volunteers regarding the problem or requirements establishes their personal interest. At this point the available volunteer(s) and the individual who originated the User request are brought together in order to continue technical discussions and exchange additional relevant information. It is believed that the direct User/Volunteer interaction will constitute the core of the selection process, with the TVS Project Coordinator keeping abreast of each development to assist if necessary and to ensure joint satisfaction.

4. Evaluation by Client

The User reaction to the TVS Program and an appraisal of its effectiveness becomes the basis for future planning of the TVS operations. As with the Volunteers themselves, timely and pertinent feed-back in a standardized format is essential for comparison purposes. To achieve this, an Agnecy or User Evaluation Form has been built into the process. It is vital that the Project Coordinator monitor the progress of the specific projects to identify any potential problem areas. The main elements on the User/Agency Evaluation Form are:

(1) Identifying information (User, city, address, phone, etc.)
(2) Name of volunteer
(3) Assignment/problem
(4) Length of assignment
(5) Time devoted by volunteer
(6) Communication problems
(7) Value of volunteer
(8) Main duties or activities of volunteer
(9) Was the volunteer technically qualified, if not, why not?
(10) Did you or will you use results?

UNIQUE FEATURES

During the course of the design and development of the LLNL-TVS Program, certain needs were identified and solutions developed. As a result there are a number of new features being built into the TVS program that warrant special attention and merit consideration for replication elsewhere.

1) LLNL-League of California Cities Technical Volunteer Orientation Program

This is a special effort to "bridge the gap" between the Laboratory research environment and the operational world of local governments. In recognition of the need to better and more systematically prepare TVS volunteers to function effectively in a different mode and to understand and appreciate client needs, an arrangement was made with the League of California Cities to design and develop a new orientation course and manual. The actual structure of the presentation and media to be used has not been finalized at this writing. It will however be a short course that can be given during the day and evening hours at different locations. The use of a Video taped program is being evaluated.

It is anticipated that the TVS orientation program will generally follow the outline and overview presented below.

The Technical Volunteer Orientation

I. Introduction to TVS Program and General Emphasis on Technical Volunteers

The Administration, Federal Agencies and their Laboratories as well as the Congress, through enactment of Public Law 96-480, have established a positive environment for increased involvement by Federal Employees in volunteerism. An overview of this information, the Technical Volunteer Service Program and related programs is presented.

II. Explanation of Local Government's Need for Volunteers

This section explains to the prospective volunteers the very real service delivery problems faced by local government. A comparison is presented between shrinking resources (i.e. Proposition 13 in California and other tax reducing and limiting legislation) and increasing demands for services. The lack of experienced technology transfer brokers within local government is also covered.

III. Description of the Typical City Environment

This portion of the orientation represents explanation of the city as a client. Of special concern is making the volunteers familiar with this new environment and how it functions. Four basic areas covered are:

* Organizational structure (legal basis, etc.)
* Operational characteristics (functions and services)
* Political dimension of activities
* Public contact and exposure (media dimension)

IV. What to Expect from a City

Working with a city is like working with any other entity; your job becomes much easier if you know what to expect. Cities, like our Laboratories or industrial firms, all operate differently; however, generalities are possible and to a large extent hold true. Areas covered are:

* Different vocabulary
* Varying Definitions of Problems
* Ambiguous Role of Volunteer
* Key Personnel to Contact
* Resistance to Change by Staff
* Time Short and Budget Limited
* Very Result-Oriented
* Slow Rate of Progress
* Routine Day-to-Day Operating Concerns
* Typical Areas for Involvement
* Possible Role(s) for Volunteer
* Success Stories

V. Explanation of Procedure to be Used

The actual detail procedures to be used in the volunteer's assignment are worked out by the TVS Coordinator and the Volunteer with the client. This section is intended to give the volunteer a base line understanding of those procedures. Of special interest is an introduction to the following:

* Pre-visit (materials on the city and the problem, letter setting the appointment, etc.)
* Visit (introduction and accompaniment)
* Post-visit (feedback on visit from volunteer and city, provision of information/assistance as requested)

VI. General Background Materials

An information package is provided the potential volunteer which can serve as a resource in accomplishing their future assignments.

2) Volunteer and User Follow-Up and Evaluation Procedures

Both the User agency and the TVS Volunteer are requested to submit evaluations of the contributions made. From the clients point of view we are concerned with whether the input was pertinent and if it was used. From the volunteer's perspective we are interested in determining the level of individual satisfaction and the value of his/her efforts. It is considered very worthwhile and necessary to measure the effectiveness of the program and to stay on top of progress and developments at each phase so necessary adjustments can be made.

3) Use of TVS Volunteers as Technology Transfer Support for the ORTA

It is believed that this is the first attempt to use technical volunteers to extend the technology transfer activities of the Office of Research and Technology Applications (ORTA). The plan is for the TVS Volunteers, mainly retirees, to help staff the ORTA Technical Assistance effort and to employ their professional and technical expertise to answer user requests for information and assistance.

4) Special "Stand-by" TVS Projects

Another unique aspect of the LLNL-TVS Program is the design of worthwhile and meaningful "stand-by" projects to utilize the capabilities of the pool of volunteers while awaiting specific user requests for the services of individual participants. The first two areas under consideration are energy conservation and computer operations for local government.

5) Linkages with Retired Local Government Officials

A variety of local government support networks and organizations already exist which represent potential partners in our efforts. The establishment of channels of communication is to the advantage of the TVS Program. For example, in California there is an organization known as Public Service Skills, Inc. This is a non-profit corporation composed of skilled veterans of public agencies representing all the disciplines related to public agency operation who have retired or are between positions. There would appear to be some very natural alliances that could be established between the Retired TVS Volunteers and such a group for their mutual advantage. This aspect needs to be explored and pursued further.

Phase B. Trial Application

The design and development effort described in the Phase A write up resulted in a preliminary set of forms, procedures and support documents (i.e. Public Information Articles and sample letters for use by the TVS). Examples of this material are contained in the Appendix to this report. Much of this material is currently being fine tuned based upon initial operation of the program. It is anticipated that each facility

establishing a TVS Program will need to carefully review all such material prior to its use for their program.

The following represents a current status report on the LLNL-TVS and a few highlights of the implementation activity which may be of value to other facilities planning to implement a TVS Program.

1. Implementation

"Technical Volunteers are Sought for Community Assistance Program". That was the headline of the article in the LLNL Weekly Bulletin announcing the kick-off of the new TVS Program. It went on to say that Lab employees - both active and retired - would soon have a chance to use their training and expertise to help their neighbors. LLNL employees were told about the launching of a new Technical Volunteer Service in an effort to solve some of the urgent problems faced by area communites. They were informed that the volunteer service would be composed of current employees willing to devote some evenings and weekends along with retired employees who would like to remain active and draw upon their extensive training and expertise. The article went on to say that questionnaires would be distributed in the near future to determine the kinds of skills which could be made available to state and local governments in need of technical assistance.

This article was one in a series used to pave the way for the initiation of the LLNL-TVS Program. The Program was announced to management levels through presentations, discussions and briefings as appropriate. A sequential approach was used to announce each action in advance of implementation. The retirees segment of the LLNL-TVS Program was the first to be initiated and the steps taken are illustrative of the approach used. The following represents major events associated with the implementation:

(a) Very early contact was made with the President of the LLNL Retirees Association. The purpose of this contact was to inform the Association of the proposed TVS Program and to gain Association cooperation and support;
(b) The Association President was also invited to serve on the TVS Resource Committee;
(c) The draft Retirees Questionnaire was reviewed by the Association President and other retirees;
(d) A presentation was made to the entire Board of Directors of the Retirees Association to acquaint them with the nature of the program and its' objectives;
(e) An article was prepared for the Retirees Corner in the LLNL Weekly Bulletin to reach the full membership and inform them about the questionnaires that they would be receiving;
(f) A cover letter signed by both the Retirees Association President and the Director of the Office of Research and Technology Applications was used to disseminate the questionnaire and urge participation.

Logistics for the mail out of the Retirees Questionnaires were worked out with the LLNL mail room and the Association itself. It was determined from membership information that approximately 1000 LLNL retirees resided in the general Bay Area.

Utilizing a zip code sort of this information a good numerical breakdown of the geographical distribution of retirees was developed. Approximately 40% of the Retirees were from the City of Livermore. Due to the relative sizes of the active and retired employees pools it could be projected that the far larger number of volunteers would be drawn from the ranks of the current employees. Since the retirees are viewed as very essential to the TVS success it was also anticipated that a continuous recruiting campaign for retirees would be necessary.

The initial response to the mail out was gratifying. Thirty seven positive responses were received with seven specifically volunteering to help staff the TVS office. These results exceeded our planning goals with regard to first round responses. At this point feed back procedures were initiated with the Retirees Association Board. Response results were reported and an article was prepared for the Retirees Corner of the Weekly Bulletin to keep the general membership informed. Individual follow-up letters were sent to each respondent.

The same careful planning of a sequential approach was used for the current employees questionnaires with several additions. Again articles in the Weekly Bulletin were used to prepared the 7200 LLNL employees for their receipt of a questionnaire. The questionnaire itself was proof tested and cleared with top management and supervisory levels within the Laboratory. In addition an advance notice of the internal mail out was provided to supervisors to ensure that they were fully aware of developments. In the cover letter accompanying the questionnaire, careful attention was paid to providing overview information about the TVS Program including specific examples of the types of possible volunteer assignments.

Response from the current employees was equally positive. Two hundred seventy two potential volunteers returned the application questionnaire as a result of the first mail out.

Simultaneously with the above, coordination channels were set up with key local government networks such as the Southwest Innovation Group (SIG) and the League of California Cities (LCC). SIG has approximately 23 member cities and counties and encompasses the 5 state area of California, Arizona, New Mexico, Nevada and Hawaii. The LCC is one of the largest and most important state networks representing both political and operational aspects of city government. Through such direct coordination, operating requirements and problems of specific member jurisdictions can be identified, key local officials can be identified and over-all common problems highlighted.

During this initial start-up phase, preliminary contacts were made with local governments in close proximity to LLNL. A draft letter notifying the local city and county officials about the initiation of the LLNL-TVS Program was developed for future outreach efforts. Follow-up visits are planned to develop effective rapport and to identify points of contact. Newspaper, T.V. and radio publicity will be employed as appropriate.

Direct contacts were made with existing community resource groups such as the Valley Volunteer Center in Pleasanton, to tell them about the LLNL-TVS Program, to share information and to set up cooperative working relationships in the public and non-profit target groups.

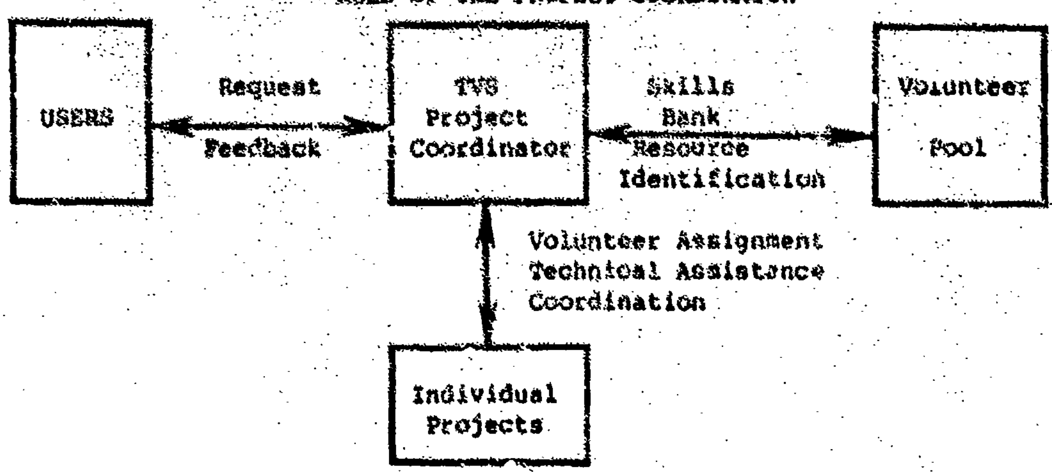
As a result of this trial implementation activity, 20 requests for assistance were received by the LLNL-TVS. Using these requests as trial cases, the TVS Coordinator has developed preliminary operating forms and procedures (i.e. Workers Compensation Certificate, Assumption of Liability, etc.). The feed back and evaluation techniques are also currently being evaluated. Initial activity has increased our belief that continued feed back and evaluation by both the volunteer and user is a critical component of the TVS.

2. Project Coordinator

A key position of the TVS operation is that of the Project Coordinator.

When the Coordinator's operational role is graphically illustrated as below, it is evident how important the linkage aspect of the position is.

ROLE OF THE PROJECT COORDINATOR



This individual must have certain skills to perform effectively including the following:

(a) Ability to communicate effectively with all Laboratory management levels, a wide range of volunteers, and a diverse user group.
(b) Ability to write effectively;
(c) Ability to operate independently;
(d) Ability to organize and operate program functions.

By virtue of the tasks involved, the Project Coordinator should be a self-starter and highly responsive to deadlines. A good understanding of the Laboratory structure and organization is required to utilize the available resource. Equally important is an understanding of Local Government and other user problems and needs. The Project Coordinator needs to function as a translator between the laboratory and user communities. Because of the volunteer nature of the TVS, the Project Coordinator must be sensitive to human motivational factors. A degree of maturity is needed to deal with both sophisticated scientists and prominent local government Officials. This person should also become fully familiar with the basic technology transfer process and historical background.

The first approach used in the LLNL-TVS Program was to recruit a University Intern to fill this position. It was planned to have a person majoring in an appropriate area on a half-time basis. This would have provided an individual who could be trained and developed to later assume a full-time Project Coordinator position as the program evolved and grew. However, two individuals were tried out in this position with less than satisfactory results. Conflicts with college work emerged and changes in career direction resulted in the departure of both. During the development and trial application phases, consultant back-up was present to assure continued program progress. As a result of this experience the position was viewed as a career placement rather than a training placement.

Due to the critical nature of this position, an extensive recruiting and selection process was undertaken and a well qualified coordinator was located and hired. Emphasis was placed on demonstrated capabilities and experience. Practical working experiences in similar type programs or organizations was stressed in the recruitment. A strong educational background in such fields as business, psychology or sociology and human relations was considered desireable.

3. TVS Resource Committee

A TVS Resource Committee was established. The committee was originally proposed to advise and assist in the overall development and operation of the LLNL-TVS Program. The proposed functions of this Committee included the following:

(a) Provide recommendations for overall Program guidance.
(b) Advise on Program direction and goals.

(c) Advise on coordination with other LLNL volunteer programs and local area programs.
(d) Be available as resource persons from their respective areas of expertise.

The TVS Project Coordinator provides staff support to the Committee and serves in the capacity of recording secretary. Clerical support is available from the LLNL Office of Research and Technology Application (ORTA). The Committee meets quarterly or as otherwise required.

The Resource Committee has six members and a Chairperson who will preside over the meetings.

The composition of the Committee will include the following:

* LLNL Representative
* Local Government Representative
* Local Community Representative
* Retirees Association Representative
* Private Sector Representative
* Retiree/Laboratory Employee

4. Program Benefits

Through out the design and development of the TVS Program, material benefits received by the volunteers, users and the laboratory were considered as primary design criteria. Based upon our analysis and initial feed back it is recommended that the following be considered in the design of future TVS Programs:

a. Benefits to Retirees:
   * Contribution to community
   * Keep professional skills active
   * Interaction with fellow professionals
   * Keep up with new technology
   * Re-affirm life-time value of training & experience
   * Open new second career opportunities
b. Benefits to Current Employees:
   * Contribution to community
   * Secondary utilization of professional skills
   * Broader work experience
   * New challenges
   * Interaction with different laboratory people
c. Benefits to Users:
   * Tap a new source of technical assistance
   * Access highly qualified pool of technical expertise & knowledge
   * Obtain back-up support at minimum cost
   * Receive services of motivated volunteers
   * Receive the benefit of high quality laboratory equipment
d. Benefits to LLNL:
   * Enhance employee development and growth
   * Contribute to more healthy community
   * Gain better community relations
   * Improve public image

Phase C. Operation and Implementation

The LLNL-TVS Program is scheduled for full operational implementation during the Summer and Fall of 1983. The Program will be carefully monitored at quarterly intervals and a full evaluation conducted by the LLNL ORTA after one (1) full year of operation. Final documentation of the results will be provided and periodic reports prepared as called for.

IV PROGRAM REPLICATION AND FUTURE EXPANSION

1) Program Replication

While the LLNL-TVS Program was designed and developed to meet local conditions and needs, many of the features and approaches are applicable for utilization at other Federal laboratories and facilities. With this assumption in mind, the intent is to continue detail documention of the experience gained by the LLNL-TVS and other laboratories as their TVS Programs are activated. This information should save time and money for future application by providing an operational model to serve as a baseline system for their implementation.

The model TVS Program consists of the forms and other materials necessary for the TVS operation and an explanation of the development sequence used. Detailed descriptions of why and how each step was taken to accomplish established goals and objectives needs to be continually updated based upon replication results. Special attention needs to be given to evaluating what approaches should be taken to best suit existing conditions and operating environments. In addition to the existing overall conceptual framework presented in this document, each component part should be laid out in an easy to follow user oriented style and format including detail scheduling estimates.

For the laboratories planning their own TVS program of a similiar nature to the LLNL Case Study, comparative time and resource estimates may be of value. Under normal circumstances approximately 1 calendar year and the assignment of one full man year of effort will be needed to set up a TVS program at a large laboratory. Normal support services such as management, public affairs and clerical will also be required. The time required may be reduced by correspondingly increasing either in-service or development consultant resources. A six month time period should be the minimum considered because of the large number of sequencial actions that must be taken and the special design considerations required to suit local conditions. Ample time for the trial application of forms and procedures must be provided to assure acceptance by potential volunteers. Simulated walk-throughs can yield valuable data. Effectiveness evaluations should be scheduled at six month intervals during the first full year of operation.

In summary, for replication of the TVS Program, this report will serve to provide a significant amount of information and material, and to some degree will be a stand alone implementation guide. In most cases however, the preparation of a site specific implementation strategy and direct implementation assistance will be required to achieve the maximum return in the shortest period of time for the implementation site.

The implementation strategy should include the following areas as a minimum:

* Developing acceptance and support both internal and external to the laboratory;
* Suggestions as to organizational placement and operating considerations;
* Identification of potential implementation problems and possible solutions;
* Operating personnel training and support; and
* Identifying potential client group(s) characteristics and environment.

The implementation assistance could be provided by FLC Laboratories with active TVS Programs or an experienced Development Contractor if resources are available and could include the following:

* On-site briefings on all aspects of a TVS Program from the conceptual phase through operational implementation;
* On-site assistance in the early planning, design and development phases. Technical assistance personnel would work with representatives from the implementation site to provide them with the benefits of experience gained and to offer suggestions on planned actions;
* Consultations at periodic intervals or as requested when problems are encountered; and
* "Hot-Line" telephone advice during all phases of the replication process. Representatives of the operational TVS Programs could be identified as points of contact.

2) Program Expansion

Due to limitations, the LLNL-TVS will, in the near term, necessarily concentrate on the local government and the non-profit sectors. It is anticipated other sectors (i.e. small business) would welcome TVS assistance, however additional work is required to develop appropriate procedures and legal limits. While considerable progress has been made and very valuable experience gained, additional effort is needed to realize the full potential of the TVS Program and to capitalize on the solid foundation now established.

Areas that warrant consideration as program expansion elements include:

a) Involvement with Private Sector Volunteer Efforts and Corporate Community Councils.

To serve the Livermore-Amador Valley Area a Corporate Community Involvement Council is being established. The goals of this council are to promote corporate volunteer programs, to build coalitions bewteen the public and private sectors; and to share ideas. LLNL has been asked to participate in this activity.

The LLNL-TVS has established initial linkage with Levi-Straus Corporate offices located in San Francisco. Representatives from Levi-Straus have

visited LLNL, toured the facility, been provided a detailed briefing on the LLNL-TVS and participated in panel discussion on volunteer programs at a national Federal Laboratory Consortium meeting. LLNL-TVS has benefited from the experience Levi-Straus has gained in their volunteer program.

Continued efforts will be made to link the LLNL-TVS with other private corporations in the neighboring area to explore the possibility of establishing cooperative efforts and specific projects to address community needs.

It is suggested that the FLC, and other member laboratories establishing TVS Programs, expand this effort to a national focus. As the use of volunteer resources such as the Laboratory TVS Program expands, coordination and team efforts with the private sector will be essential.

b) Participation in National Professional Volunteer Organizations

LLNL representatives have become members of the Association for Volunteer Administration (AVA) and VOLUNTEER: National Center for Citizen Involvement, to help keep abreast of the latest developments in the volunteer field and to establish contacts with key individuals and agencies. The FLC and Member laboratories should expand this involvement in organizations such as AVA and VOLUNTEER and establish a leadership role within the public sector.

c) Extention of the TVS into the Private Sector

Initial emphasis of the LLNL-TVS program has been directed toward local government and non-profit organization support. In addition to a clearly established need and the priority placed on this target group by PL 96-480, contacts and working relationships were already in place. To complete the full service range of the TVS expansion to include the private sector where appropriate, especially the small business target group, operational procedures and forms will need to be modified and revised as necessary to respond to specific requirements.

d) Computerization of TVS Procedures and Volunteer Skills Bank

The TVS skills bank can be maintained in a number of ways. When the size of the data base and the frequency of use warrant, some form of automation will become necessary. The LLNL-TVS skills bank is currently maintained on a WANG Word Processor which has the capacity to provide a degree of search capability. Obviously the use of a Micro Computer and a tailored data base management program would greatly enhance the operational usage of the skills bank.

The development of a standardized computer based skills bank for use by the individual laboratory TVS Program would be a desired addition to this data package.

V. CONCLUSION

The TVS Program demonstrates a new and innovative way of integrating Federal Laboratory resources with local government and other Users in a joint effort to meet the technical needs of the community. The TVS Program is designed to bring these groups together in a mutually beneficial interaction.

This report provides a set of forms and procedures that can readily be replicated. The successful development of this Program proves the worth of professional and scientific volunteers to local government. The individuals who volunteer for this effort have the productive capability, willingness, time and experience to dramatically affect the amount of technical support available to local government administrators and ultimately the quality of life for all of us.

APPENDIX CONTENTS

LLNL TECHNICAL VOLUNTEER SERVICE
Resource Committee

CHARTER

INTRODUCTION

The TVS Resource Committee will be established to advise and assist in the design and dvelopment of a Technical Volunteer Service (TVS) Program for Lawrence Livermore National Laboratory.

The TVS will provide up-to-date information on skills, abilities, experiences, technical and educational training and professional qualifications of active and retired LLNL employees available as volunteers. The purpose will be to make available qualified volunteers who could assist, advise and consult with various local government agencies or non-profit organizations.

In addition, the TVS Resource Committee will serve as a forum for the exchange of information on various programs throughout the Lab that are concerned with community involvement (i.e. public relations, educational outreach, technology transfer, social service, etc.).

EXPECTATIONS

The Resource Committee will:

1. Provide input for overall project guidance.
2. Advise on project direction and goals.
3. Advise on coordination with other LLNL programs and local volunteer programs.
4. Be available as resource persons from their respective areas of expertise as required.

ORGANIZATION OF THE COMMITTEE

The Resource Committee will consist of six (6) members and one (1) chairperson who will preside over the meetings.

The TVS Coordinator will provide staff support to the Resource Committee.

The Resource Committee will be provided general support through the LLNL Office of Research and Technology Applications (ORTA).

COMMITTEE MEETINGS

The Resource Committee will meet quarterly or as otherwise determined at a time and location to be determined by the Committee. Special meetings may be called by the Chairperson as required.

TV Prog LLL

Lawrence Livermore National Laboratory

January 26, 1983

Mr. Lee Horner
Manager, City of Livermore
1052 South Livermore
Livermore, California 94550

Dear Mr. Horner:

As a major step in implementing the Stevenson-Wydler Technology Innovation Act, the Lawrence Livermore National Laboratory is organizing an official Technical Volunteer Service program for both active and retired employees. This program will be an integral part of its mission to provide technical assistance and support to state and local governments, non-profit organizations, and small businesses.

An Advisory Committee is being formed to provide overall guidance and to advise on project direction and goals. It is intended that the Advisory Committee meet quarterly on a regular basis but more frequently during the early project phases.

Because of LLNL's location in the city of Livermore and since the largest single concentration of retirees resides there also, I feel that it would be mutually advantageous if a member of your staff could serve on the Advisory Committee. I have spoken to Barbara Hempill and she has indicated a willingness to participate, if authorized.

If you would find it possible to permit her to become a member of our Advisory Committee, I feel that it would significantly help us in understanding your needs and more effectively responding to them. I would be happy to provide additional information or to answer any questions that you might have.

Sincerely,

Gerald T. Richards
Office of Research & Technology Applications

4318J

An Equal Opportunity Employer • University of California • P.O. Box 808 Livermore, California 94550 • Telephone (415) 422-1100 • Twx 910-386-8339 UCLLL LVMR

An Equal Opportunity Employer • P.O. Box 808, Livermore, California 94550 • Telephone (415) 422-1100 • Twx 910-386-8339 UCLLL LVMR

December 27, 1982
4216J

TO: LLNL Retirees

SUBJECT: Technical Volunteer Service Program

As a major step in implementing the Stevenson-Wydler Technology Innovation Act, the Laboratory is organizing an official Technical Volunteer Service program for both active and retired employees. This program will be an integral part of our mission to provide technical assistance and support to state and local governments, non-profit organizations, and small businesses. It will provide us an opportunity to make a statement, through action, that LLNL is genuinely concerned about all aspects of community and national welfare.

The Technical Volunteer Service will provide an opportunity for you to become actively involved in technical assistance projects with school districts, city, county and state governments, and local organizations. You will be able to contribute directly to the solution of urgent technical problems affecting these agencies at a time when other resources are drying up. Your participation can be in the form of direct technical assistance, as a source of information, or an opportunity to act as a consultant in an advisory capacity. When fully operational, the Laboratory Volunteer Program will also provide a fully-networked referral service with existing volunteer services.

Included with this letter is a short questionnaire designed to tell us about your talents and interests, as well as a fact sheet with additional information about the purpose and benefits of the TVS. Please complete the questionnaire and return it to us in the enclosed envelope by January 15, 1983. The questionnaire information will allow us to establish our skills bank for the Technical Volunteer Service.

With your help, we can make this opportunity pay off for the Lab as well as for our communities.

Wilma McGurn

Wilma McGurn, President
LLNL Retirees Association

Gerald T. Richards

Gerald T. Richards
Office of Research & Technology Applications

TECHNICAL VOLUNTEER SERVICE OFFICE
Office of Research & Technology Applications
Lawrence Livermore National Lab.
P. O. Box 808, L-700
Livermore, California 94550
Phone: (415) 422-6416

University of California
Lawrence Livermore National Laboratory

TECHNICAL VOLUNTEER SERVICE

SOME AREAS OF POSSIBLE ASSISTANCE:

- Administration
- Biomedical
- Computer Technology
- Education
- Energy Conservation
- Engineering
- Environmental
- Hazards Control
- Law Enforcement
- Management
- Office Skills
- Procurement
- Public Relations
- Public Works
- Transportation

PROJECTS INVOLVING RETIREES AT NAVAL UNDERWATER SYSTEMS CENTER, NEW LONDON, CONNECTICUT

- Helped a Public Works Director assess the efficiency of leak detection equipment

- Assisted with bids for antenna systems based on technical evaluations

- Provided energy-related conservation surveys and recommendations

- Researched information regarding small car usage for police vehicles

- Researched use of natural plants as a filtration system for polluted water

- Assisted a school system in taking its property inventory

- Designed a planning department including job descriptions, organization charts, managerial priorities

LLNL TECHNICAL VOLUNTEER SERVICES
INTEREST SUMMARY QUESTIONNAIRE - RETIREE

Please print and answer all questions. Thanks!

A. ____
Last name First Initial

____
Address

____
City State Zip Code

Home Phone: __________

Occupation/Profession: ______________________________

Education: High School ____ Voc./Tech. School ____
Some College ____ College Degree in ______________ ______________
Graduate degree(s) in ______________ ______________
Other ______________________________

B. 1. In what ways would you be willing to assist local and state governments, communities, agencies and non-profit organizations? (Circle all that apply)
a. Technical & professional advice/consultation
b. Technical skills to accomplish a task
c. Teaching/training
d. Public speaking
e. Social service/counseling/youth work
f. Any way: clerical, physical, technical, professional, administration
g. Other: ______________________________

2. Would you volunteer to staff the LLNL Volunteer Program Office?
Yes ___ No ___

3. When are you available for volunteer work?
Hours per week _________ Almost any time: Yes ___ No ___
Any preferred days and hours ______________________________
Weekends: _________ Evenings: _________ Weekdays: _________
Regularly scheduled vacation periods: ______________________

4. What are your main professional and technical skill areas? __________
____
____

5. What are your special skills, training, interests or hobbies? __________
____
____

6. Do you prefer any particular type of client or age group? __________
____

7. In which LLNL activities, volunteer programs, educational outreach program or service activities are you currently active? ______________________________

8. In which non-LLNL civic activities and volunteer programs are you active? (Please include local offices held, service on commissions & boards, etc.) ______________________________

______________________________ ______________________________
Signature Date

Thank you for your interest in the LLNL Technical Volunteer Service!

HELP WANTED!!!

NEEDED IMMEDIATELY! A Retired Volunteer to help organize and implement the Technical Volunteer Service. Hours arranged at your convenience between 8:00 am and 4:30 pm in the TVS Office. If interested, please check "YES" on question B.2 of the questionnaire OR give us a call at 422-6416.

Lawrence Livermore National Laboratory
P.O. Box 808, L-700
Livermore, Ca. 94550
Ph: (415) 422-6416

March 16, 1983

TO: LLNL Employees

SUBJECT: Technical Volunteer Service Program

As a major step in implementing the Stevenson-Wydler Technology Innovation Act, the Laboratory is organizing an official Technical Volunteer Service program for both active and retired employees. This program will be an integral part of our mission to provide technical assistance and support to state and local governments, non-profit organizations, and small businesses. It will provide us an opportunity to make a statement, through action, that LLNL is genuinely concerned about all aspects of community and national welfare.

The Technical Volunteer Service will provide an opportunity for you to become actively involved in technical assistance projects with school districts, city, county and state governments, and local organizations. You will be able to contribute directly to the solution of urgent technical problems affecting these agencies at a time when other resources are drying up. Time may be donated in the evenings or on weekends. Your participation can be in the form of direct technical assistance, as a source of information, or an opportunity to act as a consultant in an advisory capacity. When fully operational, the Laboratory Volunteer Program will also provide a fully-networked referral service with existing volunteer services.

Included with this letter is a short questionnaire designed to tell us about your talents and interests, as well as a fact sheet with additional information about the purpose and benefits of the TVS. Please complete the questionnaire, and return it to the ORTA Office, L-700 using the Laboratory mail by April 1, 1983. The questionnaire information will allow us to establish our skills bank for the Technical Volunteer Service.

With your help, we can make this opportunity pay off for the Lab as well as for our communities.

Gerald T. Richards

Gerald T. Richards, Head, ORTA

TECHNICAL VOLUNTEER SERVICE OFFICE
Office of Research & Technology Applications (ORTA)
Lawrence Livermore National Lab.
P. O. Box 808, L-700
Livermore, California 94550
Phone: (415) 422-6416

TECHNICAL VOLUNTEER SERVICE

SOME AREAS OF POSSIBLE ASSISTANCE:

- Administration
- Biomedical
- Computer Technology
- Education
- Energy Conservation
- Engineering
- Environmental
- Hazards Control
- Law Enforcement
- Management
- Office Skills
- Procurement
- Public Relations
- Public Works
- Transportation

TVS PROJECTS AT NAVAL UNDERWATER SYSTEMS CENTER,
NEW LONDON, CONNECTICUT

- Helped a Public Works Director assess the efficiency of leak detection equipment

- Assisted with bids for antenna systems based on technical evaluations

- Provided energy-related conservation surveys and recommendations

- Researched information regarding small car usage for police vehicles

- Researched use of natural plants as a filtrations system for polluted water

- Assisted a school system in taking its property inventory

- Designed a planning department including job descriptions, organization charts, managerial priorities

LLNL TECHNICAL VOLUNTEER SERVICE
Lawrence Livermore National Laboratory
P.O. Box 808, L-700 * Livermore, California 94550
(415) 422-6416

UNIVERSITY OF CALIFORNIA LAWRENCE LIVERMORE NATIONAL LABORATORY PRIVACY NOTIFICATION

The State of California Information Practices Act of 1977 (effective July 1, 1978) requires the University to provide the following information to individuals who are asked to supply information:

The purpose for requesting the information on this form is to collect information to use in building a skills bank to support the Laboratory's Technical Volunteer Service. Laboratory and University policy and State and Federal statutes authorize the maintenance of this information.

Furnishing the information on this form is voluntary.

Individuals have the right to review their own records in accordance with Laboratory Policies. Information on these policies can be obtained from the Personnel Department.

The official responsible for maintaining the information contained on this form is: Manager, Office of Research & Technology Applications.

INTEREST SUMMARY QUESTIONNAIRE

Answers to the questions will help us match your interests and talents with individual requests for help. Response to this questionnaire is voluntary for those employees who would like to be involved in LLNL's Technical Volunteer Service.

PLEASE PRINT

A. ____
Last Name First Initial

____
Address

____
City State Zip Code

Home Phone:____________________ Business Phone:________________

Occupation/Profession:______________________________________

Department/Program:____

Education: High School__________ Vocation/Technical School________
Some College__________ Degree in____________________
Graduate Degree(s) in______________________________
Other______________________________

B. When are you available for volunteer work? List preferred days and hours (include weekends): ______________________________

____

Hours per week: ______________________________

C. What are your main professional and technical skill areas?

____

____

____

____

D. What are your primary areas of interest or special concern?

____

____

____

____

E. Do you have any special skills or hobbies? What are they?

____

____

____

F. Are you currently active in any LLNL volunteer programs, educational outreach programs, or service activities? Please list.

____

____

____

G. Are you currently active in any <u>non</u>-LLNL civic activities or volunteer programs (include local offices that you hold and boards/commissions/other that you serve on)? Please list.

____

____

____

H. Additional comments or recommendations.

____

____

____

____

____

______________________________ ______________

Signature Date

4271J

Lawrence Livermore National Laboratory

(Date)

(Name)
(Address)

Dear :

We want to thank you for your interest in the LLNL Technical Volunteer Service (TVS). One of the most positive aspects about this program is the enthusiastic response we have received from LLNL employees.

Your name and background information have been placed in the TVS data bank. We will be contacting user groups to discuss their needs and requirements. The TVS coordinator, Candy Simonen, will be contacting you as we receive requests for someone with your background. In the meantime please call her at 423-4902 or write to her at Lab mail code L-700 if you have any comments or questions.

We appreciate your efforts in returning the volunteer interest questionnaire. We sincerely welcome you and hope that through your voluntary efforts you will gain satisfaction by contributing to your community in worthwhile technical areas.

Sincerely,

Gerald T. Richards
Office of Research &
Technology Applications

GTR/ps

An Equal Opportunity Employer • University of California • P.O. Box 808 Livermore California 94550 • Telephone (415) 422-1100 • Twx 910-386-8339 UCLLL LVMR

June 13, 1983

LLNL TECHNICAL VOLUNTEER SERVICE

VOLUNTEER DATA RETRIEVAL

The information on the returned volunteer questionnaires for the LLNL Technical Volunteer Service is stored on a Model 25 Wang word processor.

Name, city, Lab mail stop, work and home phone numbers, account number, degree and field are recorded for each volunteer. In addition, key words for each volunteer indicate his/her occupation or profession, skills, interests, hobbies and other data.

A separate listing has been made of those key words, so that when a job request comes in we can scan the key word list for relevant words and, using the SEARCH capacity of the Wang, make lists of potentially appropriate volunteers.

This is currently working fairly well except that our current Search & Print routine is cumbersome; we hope to streamline it as we become more familiar with the capacities of our Wang system. In addition, our current key word list is lengthy and will be compressed by combining similar key words and eliminating irrelevant entries.

Attached are copies of the interim lists of key words for both the retired and current employee volunteers.

0143R

TVS PARTICIPANT INFORMATION RECAP
(Active Employees)

SAMPLE

DOE, John	(City)	Phone	Lab Mail Code/Lab Phone	MS Chemical Engr.
		O/P:		
		S/I:	Laser Isotope Separation, Process Modeling, Materials Analysis, Interfacing Computers to Experiments, Data Analysis, Data Reduction	
		H/O:	Woodworking, Micro Computers, Personal Computers (PET)	
NAME	(City)	Phone	Lab Mail Code/Lab Phone	PhD Physics
		O/P:	Physicist	
		S/I:	Systems Analysis, Computer Modeling, Energy Conservation, Arms Control, Environmental	
		H/O:	Solar systems, Photography	
NAME	(City)	Phone	Lab Mail Code/Lab Phone	Aero Engineering
		O/P:	ME	
		S/I:	Precision Manufacturing Machinery, Production Methods	
		H/O:	Sailing, Woodworking, Photography	
NAME	(City)	Phone	Lab Mail Code/Lab Phone	PhD Chem. Engr.
		O/P:	Chemical Engineer	
		S/I:	Energy Conservation, Synthetic Fuels, Fluid Dynamics, Heat Transfer, Instrumentation	
		H/O:	Welding, Machine Work, Photography	
NAME	(City)	Phone	Lab Mail Code/Lab Phone	AA
		O/P:	Mechanical Technologist	
		S/I:	Machinist, High Vacuum Technician, X-Ray Optics, Laser Optics	
		H/O:	Woodworking, Personal Computing	
NAME	(City)	Phone	Lab Mail Code/Lab Phone	PhD Systems Theory
		O/P:	Mathematician, Engineer	
		S/I:	Organizational Theory, Computer Science, Systems, Communications, Hazards	
		H/O:	Emergency Communications	
NAME	(City)	Phone	Lab Mail Code/Lab Phone	MBA MS Electrical Engr.
		O/P:	Engineer	
		S/I:	Control Systems, Financial Management	
		H/O:	Property Management, Photography, Building Maintenance, Gardening, Appliance Repair	

O/P: Occupation/Profession
S/I: Skills/Interests
H/O: Hobbies/Other

No.__________

LLNL TECHNICAL VOLUNTEER SERVICE
Lawrence Livermore National Laboratory
P. O. Box 808, L-700 - Livermore, California 94550
(415) 423-4902

VOLUNTEER REQUEST FORM

1. Agency__________________________
2. Brief description of project for which volunteer is desired:

3. Specify skills (or profession) and abilities desired:

4. Location of assignment:__________________________
5. Date needed: from ____________ to ____________
6. Preferred work schedule:__________________________
7. Number of volunteers desired:__________
8. Additional comments:

9. If a volunteer is not available, what will happen to this project?

10. Proposed supervisor:__________________ Phone:__________
11. Requested by:__________________ Phone:__________

Date:__________________

==

TVS Office Use Only:

1. Referred by__________________
2. Disposition:
   TVS Match__________ No Serv. Avail.____ Ref. to__________
   (Name)

Follow-Up

1. Volunteer Report __________
2. Agency or Department Evaluation__________

By__________________________

3921J
5/10/83

LLNL TECHNICAL VOLUNTEER SERVICE
Lawrence Livermore National Laboratory
P. O. Box 808, L-700 - Livermore, California 94550
(415) 423-4902

VOLUNTEER REPORT FORM

Please describe your volunteer assignment:

1. Name of agency you helped: ____________________

2. Supervisor or contact person: ____________________

3. Starting date of assignment ____________ Ending date ____________
   Approximate time spent on project ____________________

4. Briefly describe what you did, how you felt about the assignment, any suggestions you might have for the Technical Volunteer Service.

____
Signature of Volunteer

0074R
5/83

LLNL TECHNICAL VOLUNTEER SERVICE
Lawrence Livermore National Laboratory
P.O. Box 808, L-700 - Livermore, California 94550
(415) 423-4902

AGENCY OR DEPARTMENT EVALUATION FORM
(Confidential)

1. Agency: ______________________________
2. Name of the volunteer: ______________________________
3. Title of the assignment: ______________________________
4. About how long did the volunteer assignment last? ______________________________
5. About how much time per week did the volunteer spend? ______________________________
6. Did you have good communications with:

	Yes				No
The Volunteer	1	2	3	4	5
The Program Office	1	2	3	4	5

Comments: ______________________________
____

7. Do you feel that the volunteer made a worthwhile contribution to the program to which he/she was assigned? ______________________________
____
____

8. What were the volunteer's main duties? ______________________________
____
____
____

9. What aspect of the volunteer's service was the most valuable to you?
____
____
____

10. Was the volunteer technically qualified for the assignment? Yes___ No___
If not, why? ______________________________
____

11. Are there other assignments in your program in which you would like to have a volunteer assist? ______________________________
____

Note: If you wish volunteers for additional projects, please complete a new "Volunteer Request Form".

______________________________ ______________
Agency or Department Head Signature Date

LLNL TECHNICAL VOLUNTEER SERVICE
Lawrence Livermore National Laboratory
P. O. Box 808, L-700 - Livermore, California 94550
(415) 423-4903

WORKERS COMPENSATION CERTIFICATE

It is certified by ____(Name of Agency)____ that ____(Name of Volunteer)______, (a) volunteer(s), will be entitled to Workers Compensation coverage by ____(Name of Agency)_____ as if he were an employee of _____(Name of Agency)________ in connection with illness or injury arising out of or incurred in the course of this work on ______(Description of Project)______.

Date: ______________________________ Signed: ______________________________

For: ____Name of Agency____________

5/83

00972

LLNL TECHNICAL VOLUNTEER SERVICE
Lawrence Livermore National Laboratory
P. O. Box 808, L-700 - Livermore, California 94550
(415) 423-4903

ASSUMPTION OF LIABILITY

In consideration of the assistance rendered by the University of California in arranging for the volunteer activity of (Name of Volunteer) on (Description of Project), it is agreed that (Name of Agency) will be liable for any and all loss, injury or damages to persons or property which may be the result of or may be caused by its operations using this(these) volunteer(s) and for which the University might otherwise be held liable.

(Name of Agency shall protect, indemnify and hold harmless the Regents of the University of California, their officers, agents, servants and employees and the U.S. Department of Energy and its officers, agents, servants and employees and save them harmless in every way from any liability for damage or injury to persons or property that may arise or be occasioned in any way because of performance of this(these) volunteer(s).

Date: ____________________ Signed: ____________________

For: (Name of Agency)

5/83

0098R

Job. No.______

LLNL TECHNICAL VOLUNTEER SERVICE
Lawrence Livermore National Laboratory
P. O. Box 808, L-700 - Livermore, California 94550
(415) 423-4902

AUTOMOBILE INSURANCE

Name: ______________________________

Volunteering with: ______________________________

Volunteer Work Period: From ________________ to ________________.

To be signed by volunteers using private auto in conjunction with volunteer assignment:

I certify that I have automobile liability insurance in force during the period of volunteer work assignment indicated hereon to satisfy the following minimum requirements.

a. Public Liability - $15,000 for one person - $30,000 for one accident.

b. Property Damage - $5,000.

____
Signature of Volunteer

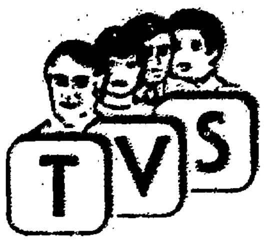
3920J
6/83

Lawrence Livermore
National Laboratory

Technical Volunteer Service

• • • • caring and sharing

Lawrence Livermore
National Laboratory

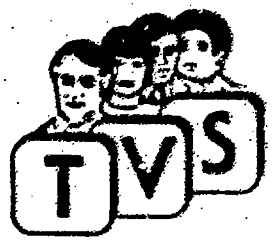


OBJECTIVES

- Explore Another Approach for Increasing Technical Resources Available to Local Governments and Communities

- Demonstrate Importance of Volunteers Through Professional Participation by Current and Retired Employees.

Lawrence Livermore National Laboratory

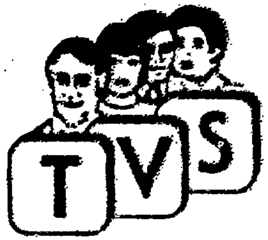


TECHNICAL GOALS

- Design, Development, Implementation, and Evaluation of Prototype Technical Volunteer Skills Bank.

- Documented Results of Experimental Effort

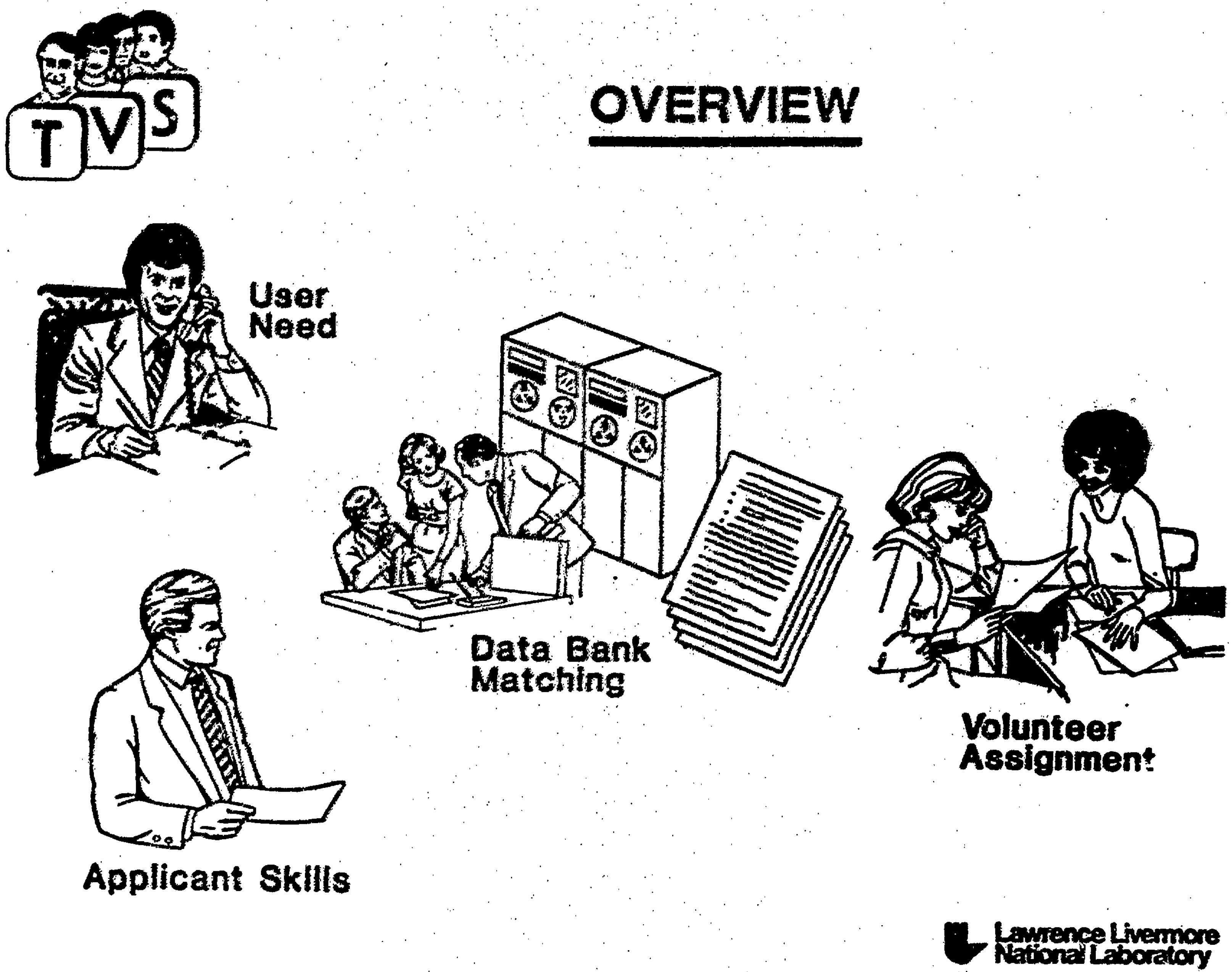
Lawrence Livermore National Laboratory



STATUS

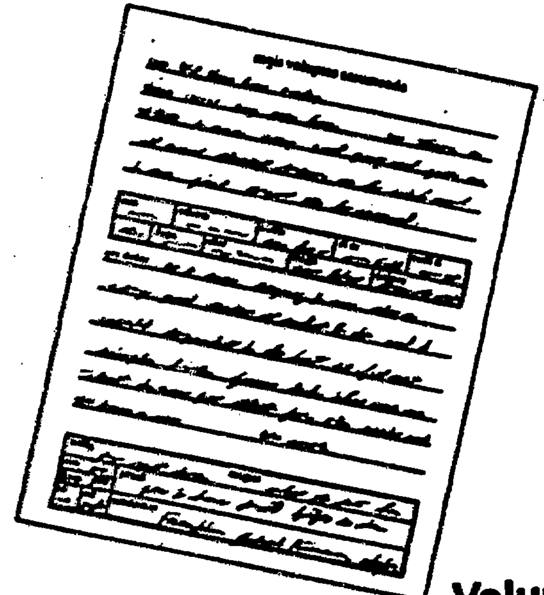
- Design and Development
- Trial Runs
- Modification and Changes
- Operational Implementation
- Evaluation

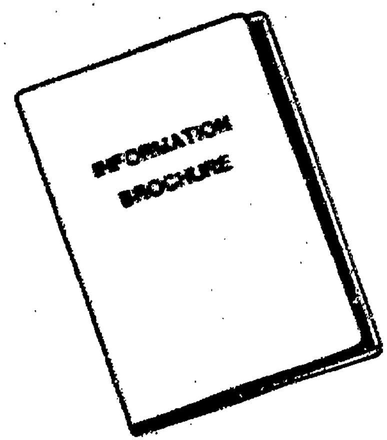
Lawrence Livermore National Laboratory


TVS
OVERVIEW
User Need
Data Bank Matching
Volunteer Assignment
Applicant Skills
Lawrence Livermore National Laboratory

PROGRAM IN-PUT: VOLUNTEERS

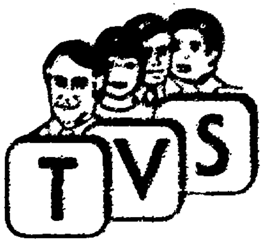
Volunteer Skills





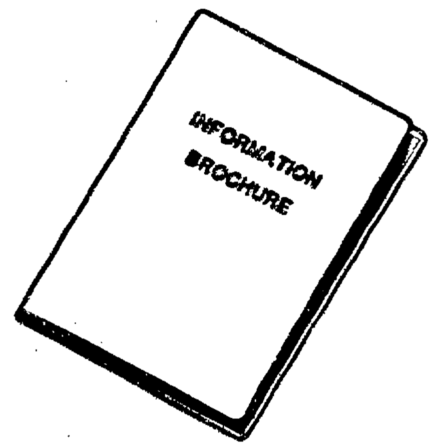
Volunteer Application Form and Questionnaire

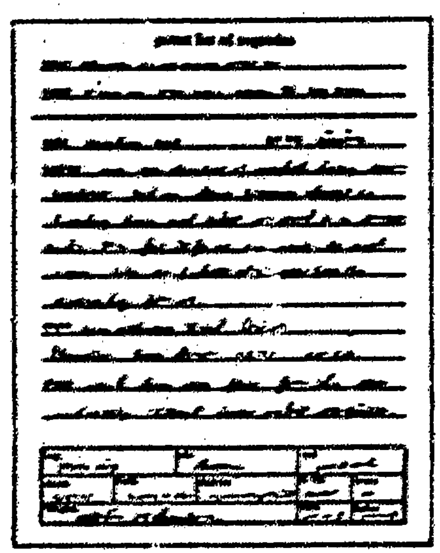
Lawrence Livermore National Laboratory



PROGRAM IN-PUT: USERS

User Needs

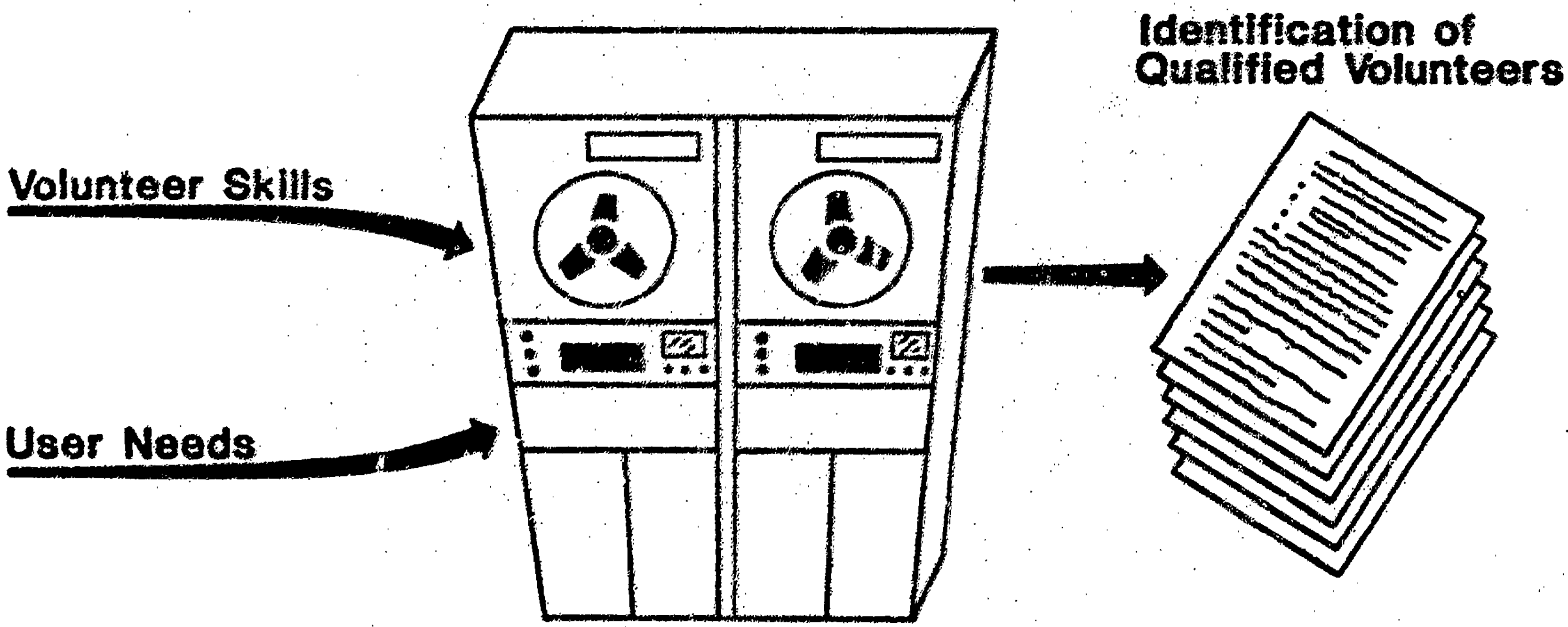




Requ:est
Form

Lawrence Livermore
National Laboratory

MATCHING



Lawrence Livermore
National Laboratory

PROGRAM OUT-PUT: SELECTION

User Interviews

Volunteer
Assignments

Possible Volunteer Roles

- Consultant
- Committee Member
- Task Force Representative
- Special Projects
- Etc.

Lawrence Livermore
National Laboratory

BENEFITS TO VOLUNTEERS

Retirees:

- Keep Professional Skills Active
- Interaction with Fellow Professionals
- Keep Up with New Technology
- Reaffirm Life-Time Value of Training and Experience
- Open New Second Career Opportunities
- Contribution to Community

Lawrence Livermore National Laboratory

BENEFITS TO VOLUNTEERS (continued)

Employees:

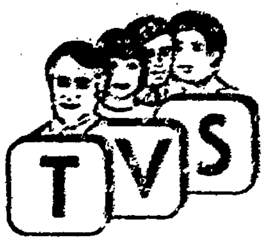
- Secondary Utilization of Professional Skills
- Broader Work Experiences
- New Challenges
- Contribution to Community
- Interaction with Different Laboratory People

Lawrence Livermore National Laboratory

BENEFITS TO USERS

- Tap a New source of Technical Assistance
- Access Highly Qualified Pool of Technical Expertise and Knowledge
- Obtain Backup Support at Minimum Cost
- Receive Services of Motivated Volunteers
- Receive the Benefit of High Quality Laboratory Equipment

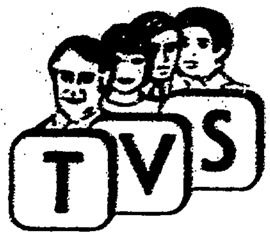
Lawrence Livermore National Laboratory



BENEFITS TO LLNL

- Enhance Employee Development and Growth
- Contribute to More Healthy Community
- Gain Better Community Relations
- Improve Public Image

Lawrence Livermore National Laboratory



FUTURE

- Extension to Other Federal Laboratories and Areas
- Extension to Private Sector
- Design and Development of New and Innovative Second Career Programs

Lawrence Livermore National Laboratory

LAWRENCE LIVERMORE NATIONAL LABORATORY

WEEKLY BULLETIN OCTOBER 27, 1982 VOL. 7 NO. 41

NEWSLINE

Technical volunteers are sought for community assistance program

Lab employees—both active and retired—soon will have a chance to use their training and expertise to help their neighbors.

Gerry Richards of the Office of Research and Technology Applications (ORTA) said a Technical Volunteer Service is being launched in an effort to solve some of the urgent problems faced by area communities.

The volunteer service, Richards said, will be composed of current employees willing to devote some evenings and weekends along with retired employees who can draw upon their extensive training and expertise.

Richards said that questionnaires will be distributed to both current and retired employees in the next few weeks to determine the kinds of skills which could be made available to state, county and local governments in need of technical assistance.

He said that close coordination is being maintained with existing volunteer efforts to insure fullest use of available resources and to avoid duplication of effort.

The Office of Research and Technology Applications is charged under the Stevenson-Wydler Technology Innovation Act with making Laboratory expertise available to the public sector.

"For over a decade," Richards said, "the Lab has shared its knowledge and hardware with other federal departments and agencies as well as with state and local government in a strong and continuing technology transfer effort."

Richards said that the benefits to the community of the technology transfer program can be seen in some current examples—the development of new protective clothing for firefighters, the development of new techniques and procedures for handling hazardous waste and the use of microprocessors for maintaining personnel records and traffic signal light control.

"The Technical Volunteer Service is a valuable and necessary extension of these Lab efforts," Richards said.

Retirees' Corner

Director's holiday greeting:

I am pleased to see a continuing keen supportive interest in the Laboratory on the part of retirees. I like to think this is because you know your experience has been uncommon, that you understand you have made a significant contribution on behalf of our country and of other free people, and that you have special insight into the need to continue this process.

I speak for everyone on the LLNL staff when I wish our retiree friends and colleagues, and their families, a Merry Christmas and a happy and rewarding New Year.

Roger E. Batzel

•••

Early this month, Lab retirees will receive a questionnaire from the Technical Volunteer Services organization, asking them to join this new program aimed at local government and communities.

What sort of assistance can retirees give? Examples range from "quick and simple" solutions to pressing problems to complex and long-term projects for more difficult tasks.

By becoming involved and working in such areas as energy conservation, development of computer specifications and programs, improvement of communications systems, installation of budget allocation techniques, applications of systems information procedures, setting up testing programs and solving engineering problems, retirees can directly demonstrate the continuing value of their training and experience.

•••

The Retirees Association is looking for a logo. Give us a good concept and our artist will put the finishing touches on the winner. Logo ideas should be sent to LLNL Retirees' Association, P.O. BOX 808, L-429, Livermore CA 94550.

Dues are $5 and should be sent to the address above.

A golf tournament is being planned for the spring by Olga and Don Bloodgood.

Retiree of the Month: The obvious thing to do upon retirement is to take up auto racing. That's the way Bill Nay, retiree from the Computer Engineering Group, saw it. So he started with a Lotus. That was too slow, so he turned it in for a Lola.

Now he's picked up another Lotus to turn into a classic. So far, Nay has burned rubber in Oregon, Idaho and California, which leaves son Bill, a training officer for Lab Security, breathless.

By Dan Wilkes

The Valley Times Tuesday, February 1, 1983

They want expertise instead of cash

DUBLIN — It's not unusual for non-profit community groups to turn to corporations for help. But the Valley Volunteer Center's latest plan for cooperation between the business world and community organizations is unusual.

Perhaps the most surprising aspect of the proposal is that the corporations are not being asked for money.

"There's very little need for an exchange of funds," Betty Stallings of the center told a group of business representatives Monday at Foremost-McKesson.

The resources the non-profit groups need are the highly-trained people who make up corporations, Stallings explained.

Stallings met with representatives of such businesses as Foremost-McKesson, Clorox, Lawrence Livermore Laboratory and Sandia Laboratories in hopes of stirring up interest in a corporate council that would work with non-profit groups.

"I think the time is right for this. There's a lot of interest in it and our community is changing," she said.

Stallings envisions the council including a combination of large firms and smaller businesses. In addition to the more technical advice firms might supply, Stallings said many non-profit groups are sorely in need of the business sense a professional can provide.

With funding becoming more difficult to find, she said, it is the well-run organizations than will survive.

The business can benefit from the partnership as well, said Stallings.

Del DelaBarre, a consultant who is developing the Lawrence Livermore Laboratory's volunteer program, told the group that employees often find working with non-profit organizations exciting.

For retirees, he said, the work can restore "the sense of loss" they felt when they left their jobs. For workers who do the same types of tasks every day, DelaBarre said, volunteer work provides variety.

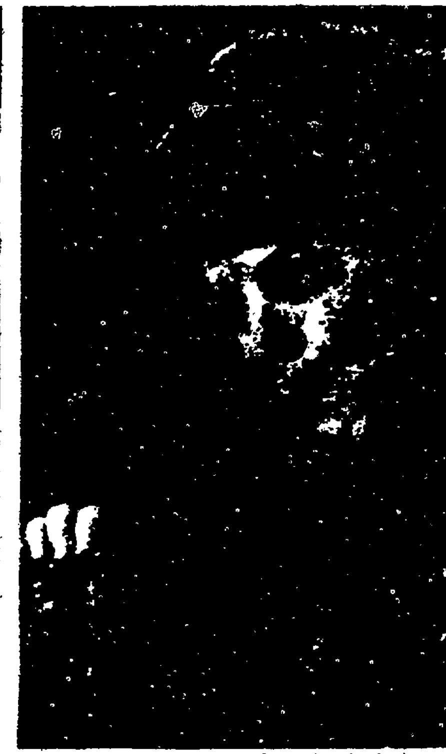
Stallings said she has looked for other corporate councils to use as a model but has been unable to find any that were formed in suburban areas.

"This will be the first," she said. It will also be the first initiated by a volunteer center, rather than corporations, she added.

The corporate representatives that gathered Monday will meet monthly to put a corporate council together, Stallings said.

Times photo/Michael Macor

Del DelaBarre ...
— Can restore sense of loss.



Times photo/Michael Macor

Betty Stallings ...
— The time is right.

Lab project provides community technical aid

By MARY COMFORT

The Laboratory, through efforts of the Office of Research and Technology Applications, is initiating a Technical Volunteer Service program for both active and retired employees.

The program, designed to provide technical assistance to state and local governments, non-profit organizations and small businesses, is part of the Lab's mission under the Stevenson-Wydler Technology Innovation Act.

"A Technical Volunteer Service is one way of transferring technology from national laboratories to the communities," said Community Relations Manager Judy Bryer who is coordinating the community outreach function.

"The Lab has a volunteer program now but it's fragmented," Bryer said. "The TVS program is a way of formalizing the process — organizing it so that it can better serve the community."

LLNL is one of five federal research and development laboratories chosen to participate in the first phase of a national demonstration project.

The project, sponsored by the Administration on Aging, is geared toward utilizing retired people 55 and older. However, the Lab is expanding its program to include current employees. Seed money for the project will come from the Office of Research and Technology Applications budget.

During the next week, Lab employees will be invited to complete a short questionnaire and return it by April 1. The questionnaire will help pinpoint employees' experience, talents and skills. Once the questionnaire is completed and returned, the employee will become a member of the TVS skills bank. Forty-five Lab retirees have already volunteered their talents and services.

According to Bryer, the Technical Volunteer Service will focus its initial efforts within the immediate Valley—Livermore, Pleasanton and Dublin. It will move gradually to accommodate Alameda and other counties.

"The program will have a significant positive impact on local governments as volunteers help to solve local problems," Bryer said.

"We anticipate providing a new capability that we are calling, broadly, technical," said Gerry Richards, head of the Office of Research and Technology Applications. He said that while it includes engineering and science, the term "technical" also includes such areas as procurement and office management.

Both Bryer and Richards see the program benefiting both its participants and the Lab in general.

"It's one of the best kinds of public relations for the Lab," Bryer said. "It will help people to understand what we do and the contributions we've made to the country. It gives us a real stake in the community."

"It ought to make the Lab a better place to work generally, if the experience of industry is any indication," Richards said.

"People will be able to utilize skills they may have which aren't used on the job," said Richards, "or, they might develop experience which they'd like to have but haven't had an opportunity to develop on the job."

Bryer said that benefits to retirees include "keeping their skills sharp, feeling good about what they do, and making contacts." For the retired person, these contacts could be social or part-time job contacts.

As for current employees, Bryer said, "A lot of people here are problem solvers—they get a kick out of solving problems. Now they can help solve a problem for someone else."

WEEKLY BULLETIN WEDNESDAY, MARCH 23, 1983

WEEKLY BULLETIN WEDNESDAY, MARCH 30, 1983

Volunteer surveys due by April 1

By MARY COMFORT

Questionnaires for LLNL's new Technical Volunteer Service program have been sent to all Laboratory employees. Employees are urged to complete and return the short form by April 1.

The Technical Volunteer Service program is being initiated by LLNL's Office of Research and Technology Applications. The program, designed to provide technical assistance to state and local governments, non-profit organizations and small businesses, will enlist the technical expertise of both active and retired employees.

Lab volunteers initially will concentrate their efforts at solving problems facing governmental agencies within the Valley — Livermore, Pleasanton and Dublin.

While the term "technical" includes scientific and engineering expertise, it also includes such areas as procurement and office management.

Through the Technical Volunteer Service, employees will be able to contribute valuable expertise to their communities, sharpen present skills and learn new ones, at the same time helping the Laboratory fulfill its mission under the Stevenson-Wydler Technology Innovation Act.

LLNL is one of five federal research and development laboratories chosen to participate in the first phase of a national demonstration project.

The project, sponsored nationally by the Federal Administration On Aging, is geared toward using the skills of retired employees. However, the Lab is expanding its program to include current employees.

Seed money for the project will come from the budget of LLNL's Office of Research and Technology Applications.

WEEKLY BULLETIN WEDNESDAY, MAY 4, 1983

Retirees' Corner

More than 40 retirees have returned questionnaires volunteering skills ranging from waste management to fruit tree grafting in the LLNL Technical Volunteer Service (TVS), now being established.

The information from these questionnaires, along with those from current employees, is being organized into a data bank TVS can use to help local governments and service groups find volunteers with technical expertise they need for local problems.

Anyone who would like a copy of the volunteer questionnaire or more information about the service should contact Candy Simonen, the new coordinator of TVS at 423-4903 or at Lab mail code L-700.

* * *

Plans for the retirees' picnic, set for 4 p.m. June 3 at the Lab pool, have been firmed up by picnic chief Neetz Riley.

A letter to all hands will soon be on its way with information about signing up and other details. For now, Neetz would like everyone to know that hamburgers, coffee, plates and eating implements will be furnished. Everyone will be asked to bring something: last names A-G, salads; H-O, snacks; P-Z, cakes and pies.

Further information is available on a regional basis as follows: Castro Valley, Wilma McGurn, 886-8090 or 881-0881; Walnut Creek, Neetz Riley, 933-1670; Livermore, Bettie Myers, 447-3908.

* * *

Fellow retirees should send news items to Wilma McGurn, 577 Sonora, Castro Valley, CA 94546.

WEEKLY BULLETIN WEDNESDAY, MAY 11, 1983

300 return surveys for volunteer service

More than 300 Lab employees and retirees have returned questionnaires responding to the request for volunteers to be part of the new LLNL Technical Volunteer Service (TVS). They offered skills ranging from computer science through waste management and energy conservation.

The information from these questionnaires is currently being assembled into a data bank so that the TVS can serve as a clearing house to match the needs of local communities with the skills and knowledge of Lab employees and retirees.

Candy Simonen, the newly-hired coordinator for the Technical Volunteer Service, said she found the number and quality of the volunteer responses to be very encouraging. "Besides scientists and engineers we have administrators, technical editors, designers, secretaries and people in the construction trades volunteering."

Anyone desiring a copy of the volunteer questionnaire or more information should contact Simonen at 423-4902 or at Lab mail code L-700.

12 WEEKLY BULLETIN WEDNESDAY, JUNE 15, 1983

RESTORATION PROJECT: *Livermore mayor Dale Turner (right) and LLNL retiree Karl Johnson discuss plans to repair the historic timber wagon at Hansen Park by three Lab retirees recruited by the Technical Volunteer Service. Al Chesterman and Hank De Coursey, who are also working on the project, are not pictured.*